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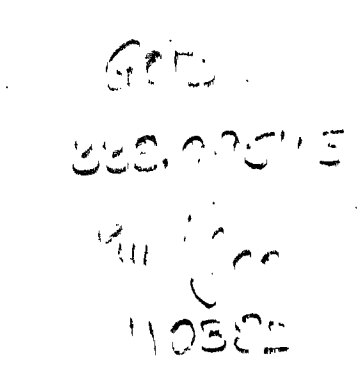

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Shri Brihad Bhartiya Samaj

on 31 October, 2019

To the monograph on Punjab industries.

No. 611.

FROM

R. G. THOMSON, ESQUIRE,
Offg. Junior Secretary to Government,
Punjab and its Dependencies,

To

J. A. GRANT, ESQUIRE,
Junior Secretary to Financial Commissioner,
Punjab.

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ac

Dated Lahore, 5th December 1884.

Revenue and Agriculture.

General.

SIR,

I AM directed to acknowledge the receipt of your letter No. 1066, dated 19th September 1884, containing a report on the cotton manufacture in the Punjab for the year 1883-84, and to convey the thanks of the Lieutenant-Governor to the Financial Commissioner for the admirable manner in which the paper has been prepared.

2. His Honor has read the account of the cotton industry of the Province with great interest, and it appears to him to fulfil most completely the purposes for which the compilation of these monographs was initiated. The report is lucid, brief and sensible, and seems to comprise all the information that is likely to be necessary on the subject.

3. With reference to the concluding paragraph of your letter under reply, I am to ask that arrangements may be made to deposit the collection of cloths in the Lahore Museum, and it is desirable that copies of the monograph should be widely circulated.

I have, &c.,

R. G. THOMSON,

Offg. Junior Secretary to Government, Punjab.

Bx-i-7

Punjab Govt. Press Lahore—6-12-84—286.

No. 1066.

FROM

E. B. FRANCIS, ESQUIRE,

Officiating Junior Secretary to Financial Commissioner, Punjab.

To

C. L. TUPPER, ESQUIRE,

Secretary to Government, Punjab.

Dated LAHORE, *the 19th September 1884.*

SIR,

Report on the manufacture of cotton.

In accordance with the orders of Government contained in the 8th paragraph of the Review of the Internal Trade Report for 1882-83 and subsequent correspondence, it has been arranged that the returns and report relating to manufactures which have hitherto accompanied the annual report on the Internal Trade of the province should be discontinued, and that in place of these a separate report should each year be prepared on some particular manufacture to be chosen for that year.

In accordance with this arrangement the manufacture of cotton has been selected as the subject for the present year's enquiry, and I am now directed by the officiating Financial Commissioner to submit the following report on that industry.

Supply and consumption of raw cotton.

2. The area of land in which cotton was cultivated in the Punjab was shown as follows in the Revenue Administration Reports of the last four years :—

	Acres.
1879-80	777,041
1880-81	785,834
1881-82	890,037
1882-83	860,631

and the returns for 1883-84 show an area of 802,534 acres.

In the Cotton Reports of the same years somewhat different figures were shown as follows :—

	Acres.
1879-80	806,380
1880-81	761,729
1881-82	918,265
1882-83	898,818

The discrepancy is probably due to the exclusion in some cases, and the inclusion in others, of lands which were sown with cotton, but of which the crop failed to come to maturity. It may be assumed, however, that the average under cotton in the Punjab amounts in most years to somewhat over 800,000 acres, and also that it is tending to increase.

The out-turn per acre of cleaned cotton was shown in the last three Cotton Reports as 96lbs. and 103lbs. The figures entered in statement No. XXIX of the statements accompanying the Revenue Administration Report are higher, but in some cases they appear to represent the yield of uncleaned cotton, and they are certainly not so accurate as the above.

The total yield of the province was shown in the last four Cotton Reports as follows :—

	Cwts.
1879-80	644,483
1880-81	653,917
1881-82	787,581
1882-83	804,917

giving an average of 722,724 cwts; or 1,011,815 maunds annually. In the same reports the excess of exports of raw cotton from the province over imports into it from other provinces was shown to amount on the average to about 110,000 cwts., or 154,000 maunds. This result is corroborated by the returns of the external and internal trade of the province, which show that the cotton exported is sent to the seaports of Calcutta, Bombay, and Karachi in nearly equal quantities, and that about 9,000 maunds on the average are exported to foreign countries beyond our northern and western frontiers. The average exports from the province by rail and river for the years 1880-81 to 1883-84 were 137,384 maunds, and the average imports from other provinces were 22,926 maunds; but it is known that, owing to the high rate charged by the railways for the carriage of unpressed cotton, a large quantity is conveyed by cart. Therefore the figures given in the Cotton Reports do not appear to be too high.

It thus appears that 857,000 maunds of raw cotton, or 84 per cent. of the whole yield of the province, are locally consumed.

Preparation of raw cotton for spinning.

3. Cotton is picked about November and December. The pods do not all ripen at the same time, and it is therefore necessary to go over the field several times. This work is chiefly performed by women. They are usually paid by giving them a portion, generally one-tenth, of the cotton they pick. The pods are exposed to the sun and beaten to make the husks (*doda*) separate from the fibre.

Ginning.

4. The seed to which the fibre is attached is then extracted by a small hand machine, which takes the place of the cotton gin. This consists of two rollers, one of which is generally of iron and smaller than the other, which is of wood; but in some districts both rollers are stated to be of wood. By means of a spiral turn at the end of the iron roller, which engages a projection of the wooden roller, the two are made to revolve in opposite directions when the handle attached to one of them is turned. The fibre (*rúi*) is then drawn through the rollers while the seed (*binola* or *varema*), which cannot pass between them, is left behind. This machine, which is called *belna*, is capable of ginning about 12 seers of cotton in the day. At Multan a steam cotton gin has been established by Sidhu Ram, Rangu Ram & Co., which employs 70 persons. In the Hazara district there are at Pakhli some *belnas* worked by water power. The *belna* worker is commonly paid by receiving the cotton seed which he extracts, but he is sometimes paid in cash. This operation is also very frequently performed by members of the household of the person to whom the cotton belongs. In the census tables 3,257 men and 1,345 women are recorded as cotton-ginners, but these figures do not represent the numbers really so employed. The cleaned cotton fibre usually weighs one-third, and the seed two-thirds, of the whole contents of the pod, but with inferior cotton the fibre is sometimes only one-fourth of the whole.

Character of staple.

5. The cotton of the Punjab has a short, but strong fibre. Improved varieties exist in some districts. Among them may be mentioned the *khadir*, or riverain, cotton of the Delhi division, and the *narma* cotton of the Rawalpindi and neighbouring districts. This cotton, according to the report of the Deputy Commissioner of Jhang, is believed to be of Egyptian origin. It is stated to have a red flower and a greenish seed, distinguishing it from the commoner variety of which the flower is yellow and the seed grey. In the report for the Shahpur district the finer stapled cotton is called *khurni* and the commoner kind *bágar*. The latter name seems to indicate the stock as having come from the Hissar district, and as being the same as what is known at Delhi as *hariána* cotton.

The ordinary cotton is hardy and can be cultivated under circumstances where exotic descriptions would probably not succeed.

Scutching.

6. Having been freed from the seed, the cotton next undergoes a process to divide the fibre, which in the pod clings together in tufts. This is analogous in object to the English process known as carding, but from the manner in which it is effected seems to be more

correctly described as scutching. It is performed by subjecting the cotton to vibration produced by a bowstring. A large bow is suspended from the roof so as to hang at a convenient height above the pile of loose cotton. The string of the bow is then twanged with a wooden catch so as to strike a small portion of the cotton, the fibre of which is scattered by the impact and thrown off in an uniform condition of soft fluff. At the same time any dirt which is entangled in the fibre falls out. The cotton is then made up into conveniently sized balls or rolls and handed over to the spinner.

Scutching is a special trade practised by men, known as *pínjá* or *nadáf*. Their numbers are shown in the census tables as 32,268, and 4,595, women also are there shown as following the occupation of cotton scutching. It is stated in some of the district reports that women who spin cotton sometimes scutch it for themselves with a bow like the *pínjás*, but of smaller size. The wages of a *pínjá* are 3 pice, or sometimes 1 anna, for each seer of cotton that he scutches, and he can usually turn out about 4 seers in the day. A considerable quantity of cotton is used in padding jackets for winter wear, but by far the larger part is spun into thread.

Spinning.

7. Before cotton is spun, it is made into small rolls of about one or two tolas in weight, called *punis*. The process of spinning is performed by the wheel and spindle, which seem to be of almost universal use where spinning is done by hand. In the Punjab, the wheel (called *charkhi*) is small, about 15 or 18 inches in diameter. It is formed of two parallel discs, the circumferences of which are connected by threads, and over the drum so formed passes a driving band, also made of thread, which communicates a rapid motion to the axis of the spindle. The end of a *puni* is presented to the point of the spindle, which seizes the fibre and spins a thread, the *puni* being drawn away, as the thread forms, as far as the spinner's arm will reach. Then the thread is slackened and allowed to coil itself on the body of the spindle until the spindle is full, when it is removed. A spindleful of thread is called a *challi* or *mudha*. These are wound into skeins called *atis* on a small frame called *ateran*, and in this form the thread is sold. In the *atí* the threads are crossed over and over in a figure of 8-form, so that they will not readily tangle. Spinning is the domestic employment, during the greater part of their leisure time, of women of all classes, and like most of such employments it is very ill-paid. A woman cannot spin more than one *chiták* or two ounces daily, unless the thread be coarse, when she may accomplish 2 *chitáks*, and her remuneration is only from 4 to 8 annas a seer, so that she earns but half an anna a day. The above is the highest rate quoted in any of the reports. That of the Rawulpindi district states that the pay is only 5 pice a seer, and the Jullundur report estimates the earnings of a spinner at only Rs. 3-12-7 a year! The difference between the average values of cotton and of cotton thread is only about 3 annas a seer. In the census tables 199,164 women and 273 men are returned as cotton spinners. At the rate of 1½ *chitáks* a day each person would be able to produce less than one maund of thread in a year, so that if 800,000 maunds of cotton are annually converted into thread, as would appear from foregoing statistics to be the case, a much larger number than the census shows must really employ themselves in spinning. That is to say, a great number of females who habitually spin failed to describe themselves as spinners by occupation. The bulk of the country yarn (*sút*) is very uneven in thickness, and unfit for anything but the coarsest cloth. Comparatively few persons can produce fine and even thread, and many of these spin only for the use of their own households. There is comparatively little trade in country yarn. The exports of the province amounted on the average for the last four years to no more than 10,681 maunds annually, and the imports to 5,559 maunds. The tariff value adopted in the trade reports is Rs. 22 a maund. This is sufficient as an average rate for the coarse yarns which are most commonly bought and sold, but thread suitable for the better class of native cloth will fetch about double this price. A little thread is used for rope making, but with this exception it all goes to the weaver.

European yarn.

8. Owing to the imperfections of the native product, the weavers of the finer fabrics, such as *susi*, *khes*, or any cloth having a pattern in it, show a decided preference for European yarn. The imports of this article amounted on the average of the last three years to 33,199 maunds a year, of which on the average 3,872 maunds were passed on to foreign countries. The imported thread is fine, clean, and even, and can be had in a variety of attractive colours. It is much dearer than the native yarn, but efforts are apparently being made to supply cheaper descriptions suitable to the means of the native community. The tariff rate adopted in the trade reports, which was Rs. 100 three years ago has now been reduced to Rs. 65 per maund. It must, however, be admitted that the quantity imported has not risen to an extent proportionate to the fall in price. The imports for the last four years have been as follows :—

	Maunds.
1880-81	38,207
1881-82	30,482
1882-83	29,800
1883-84	34,286

Much thread is also being produced by Steam Spinning Mills in Bombay and other places in India, which is almost equal to the imported article, and is frequeutly confused with it. In the Ludhiana district it is reported that about half the yarn used is imported, the well-known Ludhiana cloth being all made of English thread. It is largely used also in Delhi, Hoshiarpur, Sialkot, Ferozepore, Multan, and for the handsome *lungís* and turbans of Peshawar and Kohat. European thread is very generally used for sewing except for the roughest kinds of work. The above statistics of import and export include both twist and yarn. The process of dyeing yarn will be described together with that of dyeing cloth.

Weaving.

9. In the census returns weavers have been distinguished as weavers of coarse and weavers of fine fabrics. The former class numbered 329,107 men and 97,158 women. The latter numbered only 6,119 men and 325 women. Ordinary weaving of plain coarse fabrics is in fact one of the common occupations of the great caste of *Chamárs*. Professional weavers, on the other hand, are much less numerous, and those who can make fancy cloths are scarce. The first process towards weaving cloth is to stretch out the warp, or longitudinal threads (*tána*). This work may be done either by the women of the weaver's family or by others. The thread is first transferred from the skeins to a reel (*ura*). Two reels are fixed at the ends of sticks on a pivot on which they can revolve. A double row of sticks or reeds is then planted in the ground at intervals of about two yards extending, either in a straight line or in a loop, to the length which the piece of cloth is to have. The warp-layer then takes a stick and reel in each hand and walks along the line, dropping the threads one inside and the other outside the upright sticks alternately so that the two cross each other between each pair. Having got to the end of the line she returns in the same way and so on, up and down, until enough threads have been laid to make the required width of the fabric. If the cloth is to have a longitudinal stripe or a check, reels of different colours must be used, and the proper number of threads must be laid with each colour.

The common native coarse cloth *khadar* or *garha* contains 250 or 300 threads in the warp, and the stuff is about three-quarters of a yard wide. Different names are given to the cloth with reference to the number of threads. That containing 250 threads is called *adhisa ;* that with 300 threads *tisa* or *trisa*. Finer cloth containing 400 threads is named *chaunsi*. In the same way *painsi* has 500, *chhisi* 600, *athsi* 800, and *hazári* 1,000 threads in the warp. The higher numbers are uncommon.

The next process is to size the warp. For this a paste made from baked meal either barley or wheaten, is used. The warp is soaked in this. It is then stretched out on a line of trestles and brushed with a brush made of *khas* grass until it is dry. The brushing removes superfluous size and fixes down any stray fibres of the yarn. Then the warp is mounted on the loom.

The loom (*khaddi*) is in its essentials much the same as the hand looms used in other countries. The weaver works sitting with his feet in a hole in the ground with the warp which is to be filled up extending horizontally from in front of him to a peg fixed in the ground some yards off. As the cloth is made it is wound up on a roller at the near end, the farther end being slackened at the same time by letting go a rope which runs round the farther peg and returns to within the workman's reach. The warp is controlled by means of peddles, (*rach*), of which for plain weaving there is one pair. The peddles consist of vertical frames of the width of the loom each of them carrying half as many loops, made of thread, as there are strands in the warp. Strands Nos. 1, 3, 5, &c., are wove through the loops of the one peddle, and pass loosely through open spaces in the other one, while strands Nos. 2, 4, 6, &c., are carried through the loops of the second peddle and through the open spaces of the first one. The lowering of one peddle thus pulls down all the threads in the odd places without affecting the remainder, while the lowering of the other has the same affect on the threads in the even places. The peddles are suspended from the roof, and are worked by treddles on which the weaver places his feet. Where a twill, check, or damask pattern, as in the favourite stuff called *khes*, has to be produced, there are two or more pairs of peddles and the threads of the warp instead of always rising and falling alternately follow a more complex rhythm, on which the pattern depends. For some of the more intricate designs of the *ghamsán khes* it is said, that as many as eight pairs of the peddles are employed. The yarn for the woof or weft, (*bána,*) is wetted, and wound on small hollow spools, generally straws. The shuttle is shaped like a small boat pointed at each end, and having the intermediate space open. In this space the spool of yarn is placed and revolves on a wire which runs through it lengthwise. The end of the yarn passes out through a hole in the side of the shuttle. One of the peddles being depressed, the shuttle is thrown from one side to the other of the warp, passing over one set of strands and under the other, and the yarn which it leaves behind it forms one thread of the woof. The position of the peddles is then reversed and the shuttle is thrown back, passing this time (in plain weaving) over those threads of the warp which it before passed under and *vice versâ*. The threads of the woof are pressed home by a heavy comb (*kanghi*) which, like the peddles, is suspended from the roof.

Niwár (tape) is woven by a simpler arrangement the threads of the warp being struck up and down by hand, and the place of the comb being taken by a blunt wooden knife.

Daris (carpets) also are woven on a simplified loom, in which the warp is regulated by hand. The compression of the woof is done with metal combs, of the width of 10 or 12 threads, several men working side by side. But in a *dari* the woof is of much less thickness than the warp, the warp is kept tight while the woof is laid somewhat loosely with the shuttle, and is then so driven home with the comb that each thread is made to touch the last thread but one, and none of the warp is left exposed. A similar principle is adopted in a few other fabrics, in which only the woof is shown.

At the census only 634 men and 58 women were returned as carpet weavers, and only 48 men and 43 women as weavers of webbing (or *niwár*).

The carpet-weavers would include the persons who make cotton pile carpets. These are mostly produced at Multan. The colours are blue and white.

A weaver can complete about 10 or 12 yards of the coarser and looser fabrics in a day and 3 or 4 yards of the finer ones. He is paid various rates according to the nature of the work, and these result in his being generally able to earn about 4 annas a day. The spools are filled for him by the women of his family.

The average value of Indian piece-goods assumed for the trade returns, is Rs. 40 per maund or Rs. 18 per maund more than the average value of yarn. Supposing 750,000 maunds of thread to be woven annually, the margin available for the payment of the weaver and his assistants would be 165 lakhs of rupees

which at the rate of 4 annas a day, or say Rs. 75 a year, would suffice to maintain 220,000 men the whole year round, this number is considerably less than that shown in the census returns. But the weavers of the common sort, have other alternative occupations of many kinds and most of them probably do not earn nearly so much as 4 annas a day by weaving only.

Dyeing.

10. The dyes in common use in the Punjab for cotton yarn and cloth have not a very great variety. The common cloth (*khádar*, *gárha*, *gazi*, &c.) is generally worn uncoloured. Dye is more commonly applied to thin cloths for women's wear. But the more esteemed coloured fabrics are woven in patterns from variously coloured yarns. The *khes* has very often a red or blue check introduced in the weaving. *Lungis*, especially on the frontier, are dyed blue or *kháki*, but the handsomest specimens are those which are woven in colours.

The commonest colours for all cotton stuffs are indigo blue, madder or safflower red, and yellow.

To dye with indigo, the indigo is ground with water, and the impurities strained off. It is then mixed with *sajji* (an impure carbonate of soda obtained by burning plants of the *salsola* tribe), *gur* (or crude sugar), and a sufficient quantity of water, and allowed to stand for several days, when some sort of decomposition takes place. The cloth or yarn dipped in this dye comes out yellow at first, but assumes the deep blue of indigo on exposure to the air. To give a dark tint several dippings are necessary. A further application of an infusion of *naspál* (pomegranate rind) will convert the blue colour to a green, light, or dark, according to the quantity of Indigo.

Naspál may also be used by itself to dye yellow. In this case the stuff after being dyed is dipped in alum water to fix the colour. Turmeric will also give a yellow dye called *basanti*, but this is not permanent. The same remark applies to yellow ochre (*bard matti*) and to the brick-red colour given by red ochre (*geru*) *Harsinghár* (the flowers of *nyctanthes arbortristis*) give a rich yellow dye. A temporary orange colour may be obtained from the flowers of the *Dhák* (*batea frondosa*). A series of beautiful scarlet and crimson tints are produced from safflower (*kasumbha*), either used alone or with the addition of yellow and blue dyes, but the colour is not permanent. Sulphate of copper (*nila túta*) gives a pretty peacock blue.

When madder (*majít*) is used the cloth is first steeped in an infusion of *main*, which is the galls of the *farásh* (*tamarix orientalis*). It is then boiled with pounded madder. Finally a solution of alum is used to fix the dye. The result is a deep red.

Brown colours are produced with catechu (*káth*), and also sometimes with oxide of iron, the stuff being afterwards treated with lime-water. *Kháki* (drab or grey) can be dyed in this way, and also with an infusion of the pods of the *kikar* (*acacia Arabica*).

Kishta or *khatta* (vegetable acid, generally an infusion of raw mangoes or of limes) is used to brighten some of the dyes, especially reds.

In some places aniline dyes are now coming into fashion. As used by the native dyers at least, they are not fast colours. Lilacs (*sosni*, *kasni*) are either produced with these dyes or with indigo combined with safflower.

The number of cotton dyers entered in the census registers was 26,844 besides 6,149 women.

Printing.

11. The cloths which are printed or stamped in colours are generally women's head coverings (*chádars* and *ornis*) and those intended for quilts (*lihafs*). The pattern is most commonly produced in madder red, with or without the addition of black. The cloth is first dipped in an infusion of galls. Then a wooden stamp, on which the pattern is cut in relief, is dipped in alum water and applied to the cloth in the proper places. The cloth is then boiled in madder. When this has been done it is subjected to a bleaching process, by being moistened and spread in

the sun for some days. The effect of this is to remove the dye except from those places to which the alum water was applied by the raised face of the stamp. Thus the pattern comes out in deep red on a pale ground. A black pattern is produced on the same stuff before the boiling process by using a stamp dipped in water in which iron rust has been steeped and fermented with flour. The chemical action of the gall infusion on the oxide of iron, which is similar to that by which common English writing ink is made produces a full black wherever the stamp is applied. A pattern can be produced on the same principle with any dye stuff to the permanence of which alum or other mordant is necessary by stamping the pattern with a block dipped in the mordant and then dipping the cloth in the dye. Those parts to which the mordant has not been applied will bleach out or become paler than the rest. Yellow and green can be applied to the uncoloured portions of the cloth by laying on the usual dyes with a brush in the proper places ; but these colours have not the permanence of the red and black above described. Another method is to protect the printed parts by a layer of thick paste and then dip the whole cloth in dye of the second colour. Thick cotton cloths are very neatly printed in four or more colours at Kot Kamalia in the Montgomery district, and the patterns are sufficiently artistic to attract European customers who use the stuff as hangings.

A sort of pattern or variegation is produced by tying small knots at intervals in a piece of cloth which is to be dyed. The knotted places being protected from the dye show pale rings when the knots are untied.

There is a mode of producing a pattern in gold or silver which is used for decorating women's shawls or veils. The pattern is stamped in glue or size to which gold or silver leaf is afterwards applied.

In Peshawar a peculiar kind of cloth ornamentation is prepared for the Afridi women a raised pattern being laid on in wetted lac. At the census 10,199 men and 1,105 women were returned as following the occupation of cotton printing. Cotton printers form a caste, known as *chimba* or *chipi*, distinct from the dyers (*rangrez*), but many persons called *chimbas* follow no higher branch of their art than that of washing.

Kinds of cloth produced.

12. The cloths woven in the Punjab consist for the most part of *garha* or *khadar* of several varieties, allied to which is *gazi*, and also *chaunsi* and *painsi*. These together make up perhaps, five-sixths of the whole quantity that is woven. They are coarse cloths, of common yarn, but are closely woven, and last well. *Dhotar* or *adhotar* is a thin loosely woven stuff of the same sort of thread. Another kind of cheap, thin stuff is known as *pagri* being made for use as turbans for the poorer classes. These stuffs are worth from Rs. 4 to Rs. 6 a hundred yards, excepting *chaunsi* and *painsi* which are worth about Rs. 8. After these the cloth most largely made is *susi*, a striped stuff used for women's trousers. This is made of fine thread, and is one of the fabrics in which English thread is now largely used. It is much more valuable than the foregoing, costing Rs. 15 or Rs. 20 per hundred yards. *Khes* is a thick cloth woven with a diagonal pattern which is produced by taking up the warp threads two at a time, one of which is dropped, and another on the other side taken up, at each passage of the shuttle. It is used as a wrapper by the well-to-do peasantry throughout the Punjab. *Khes*, as already remarked, is frequently made with blue or red stripes in the border, the former colour being generally used by Mussulmans and the latter by Hindus. Of the same character as *khes* are the thick cloths known as *dotáhi* and *chautáhi* which are used as counterpanes as the names imply. *Dotáhi* will cover an ordinary native bed when folded double, and *chautáhi* when folded four times. These cloths are not generally woven in one breadth, but in two or three which are afterwards sewn together. *Dolara* is a coarse stuff used as a floor-cloth. *Sálara* is a thin cloth used for women's head-coverings or *chadars*. *Dosúti* is a cloth of which the threads of both worp and woof are double. It is a very durable cloth, but is not made to a large extent. There is also a cloth made in which the threads are quadruple, and which is therefore called *chársúti*. *Chhisi, athsi*, &c., have already been described as finer varieties of the common cloth. *Ghâti* is a fine cloth, of a close texture ; in Jullundur it is also called *andras*.

The cloths made from English thread at Ludhiana are mostly imitations of imported fabrics. They comprise a great variety of checks, especially of the kind called *gambroons*. Ludhiana *lungís* are well known. They are generally of blue or *kháki* in imitation, probably, of the Peshawur *lungís*. Dusters, towels, handkerchiefs, &c., are also made for the use of Europeans. *Pagrís* of good quality are made in Delhi and a limited quantity of very good specimens of the same stuff is produced in the Rohtak district. Weaving has attained considerable perfection in the towns of Kasur, Khemkaran, and Sur Singh in the South of the Lahore district, a result to which the institution of the Kasur school of industry may have contributed. Handsome *lungís* are made in Shahpur and the Multan division in which red, yellow, and pale green colours predominate. English thread is in many places used to make a stuff known as *nakli* (or imitation) *daryai*, being a plain fine stuff supposed to be similar to the true *daryai* which is of silk. *Daryai* is generally made of a yellow or light green colour. The silk fabric called *gulbadan*, the peculiarity of which is its narrow stripes is also imitated in English cotton thread. These stuffs are glazed with gum after they are woven. As a rule native stuffs receive no finish, but are sent to market just as they leave the loom. In some of the western districts various kinds of fancy cloths appear to be described generally as *lácha*. In Gurdaspur a special cloth known as *garbi loi* is made which has attained some reputation. It is said to be exported to Cawnpore, Mirzapur and even to Calcutta. Some other varieties are mentioned in the district reports, but they seem to be exceptional and of no great commercial importance. The Peshawar and Kohat *lungís* have been mentioned, but the ornamental ends of these *lungís*, which give them their value are not of cotton, but of silk or gold and silver thread. The cotton part of the fabric is plain blue or grey.

Amount of cloth manufactured.

13. Most of the district officers have endeavoured to furnish estimates of the quantities of cloth of each kind produced in their districts. Their results however are not all calculated in the same way. In some cases the value and in others the measure only of the cloth is stated. In many cases two or more kinds of cloth have been jointly estimated. Some Deputy Commissioners again profess themselves unable, in the absence of regular statistics, to furnish any estimates at all of the extent of the outturn. By adding together the figures which have been given, affixing values so far as possible where only quantities are given, and making a rateable addition for those districts which have not submitted returns, the following estimate has been prepared, which may perhaps be accepted as fairly representing the value of the annual outturn of the province :

	Rs.
Khádar	82,00,000
Gárha	14,00,000
Guzi	3,00,000
Pagri	5,00,000
Dhoti	1,00,000
Dhotar	7,00,000
Khes	6,00,000
Dotáhi and chautáhi	6,00,000
Dolara	3,00,000
Chaunsi	18,00,000
Painsi	14,00,000
Chhisi, &c.	6,00,000
Susi	23,00,000
Lungis...	12,00,000
Sálara	2,00,000
Miscellaneous...	8,00,000
Total	2,20,00,000

This estimate seems to be rather under than over the mark. If 750,000 maunds of cotton be made into cloth and the cloth be worth on the average Rs. 40 a maund, the value of the out-turn would be three *crores* of rupees. But the above tariff rate is probably too high for the marjority of coarse cloths made for home use. In the manufacture return of 1881-82 (the last which

was printed with the Internal Trade Report) the computed value of the whole outturn is shown for each district, and the aggregate of these sums is 278 *lakhs* of rupees.

The manufacture in all its stages is conducted by single operatives working at their own homes. With the exception of the steam cotton-gin at Multan there is not an establishment in the province that employs 20 hands.

Indian piece-goods are both imported into the Punjab and exported from it, but the exports exceed the imports. The imports amount on the average of the last four years to 53,259 maunds annually. They come principally from Bombay and the North-Western provinces. None of the district reports except those of the frontier districts, Hissar and Sirsa mention any large imports of native cloth from other provinces. It is mentioned that nearly the whole of the imports into Hissar and Sirsa are re-exported to Bikanir, and a large part of the stuff sent to the frontier is certainly exported to Afghanistan.

Country cloth was exported from the Punjab in the last four years to the average extent of 139,911 maunds a year, of which 93,056 maunds were conveyed by rail or river to other parts of India and the remainder 46,855 maunds went to foreign countries beyond the western and north-western frontier. It may be assumed that about one-third of these exports were the produce of other provinces, and two-thirds were of Punjab manufacture. The internal export trade is mostly with Rajputána, which takes a large proportion of the goods made at Delhi. As much as half of the *pagrís* woven in that district are exported. A large business in weaving cotton goods for Afghanistan and adjoining countries is done in the districts of Shahpur, Jhang and Multan. These consist of fabrics of all sorts but mostly of the common country cloth. The cotton cloth of Girot in the Shahpur district has so wide-spread a repute that the dealers of that town use a stamp to distinguish their products, and it is said that cloth is brought in from the surrounding country to Girot in order to receive this mark and pass as Girot-made. There is also a considerable trade with Kashmir from the districts of Lahore, Gurdaspur and Sialkot.

After deducting exports, the amount of country cloth retained for consumption in the province would appear to be about 670,000 maunds worth probably about 225 *lakhs* of rupees.

Competition of European piece-goods.

14. The above amount of native cotton cloth, however, by no means suffices for the wants of the population. European piece-goods are imported to an enormous extent. The weight of the imports of these goods for the last four years averaged 448,489 maunds. A variable quantity, which in the last four years averaged 52,767 maunds was re-exported to other provinces by rail or boat, and 42,011 maunds were despatched to foreign territory beyond the north-western frontier. On the average therefore the Punjab consumes annually 353,711 maunds of European cotton goods, worth, at the standard valuation of Rs. 85 per maund, no less than Rs. 3,00,65,435. As in the case of twist and yarn, the English manufacturers appear to be gradually cheapening their goods, and so bringing them more and more within the reach of the mass of the population. But on a comparison of the figures of the last four years their use does not seem to be extending very rapidly in the Punjab. The excess of the imports over the exports in these years was as follows: —

	Maunds.	Value, Rs.
1880-81	353,444	... 298,79,033
1881-82	324,820	... 282,70,376
1882-83	353,702	... 293,10,139
1883-84	382,881	... 320,17,375

This rate of increase seems to be hardly so large as would be accounted for by the growth of the purchasing power of the people. It seems probable that, notwithstanding the competition of Manchester, the Punjabi weaver's trade is rather extending than diminishing, and that there is still plenty of room for both. The great mass of the population of this part of India require for their ordinary

working garments a plain substantial stuff containing a good weight of strong cotton, and it is not in the power of the European manufacturer to supply such stuffs to them at a rate which would command their custom, all the advantages derivable from the use of machinery being in the case of such goods more than neutralised by the cost of transporting the material. Some of the finer native fabrics, however, are undoubtedly being replaced by imported stuff. The fine calico called by the native dealers, *khása*, is preferred by the better classes to *ghátí*; *chhisi*, *athsi*, &c. An English-made kind of *súsi*, known here as *bokhára* is, by reason of its bright and varied colours and its better texture, supplanting the native stuff to some extent in the towns. *Malmal* can hardly be said to have ever been made to any important extent in this province, but what demand there was for this article is probably now satisfied by English muslin. The figured and spotted muslins which are now so popular are a new thing altogether and do not usurp the place of any native product. English chintz, which is imported in endless varieties has probably diminished the demand for the handiwork of the *chhisi*. Where regularity and precision are of importance machine-made goods will, of course, always excel those made by hand, both in cheapness and in appearance, and it is better for the Punjab to import goods from England than to make them locally at a higher cost. The displacement of labour will cause no harm if it be not too sudden, and from the above-quoted figures it certainly does not appear that it is taking place with revolutionary rapidity. Taking together both country-made and imported goods it appears that the people of the Punjab expend on cotton fabrics an annual sum of about 525 *lakhs* of rupees or about Rs. 2-12 for each head of the population, and the fact, that they are able to do this seems to speak well for the general prosperity of the province.

15. The district reports which were due to Commissioner's offices on the 1st of June were most of them punctually submitted, though exceptions must be noted in the case of the Dera Ghazi Khan and Hoshiarpur districts, the reports for which were not sent in till the 12th and 27th of August respectively.

Particularly good and complete reports have been received from the districts of Shahpur (by Mr. S. le P. T. Clifford, Extra Judicial Assistant,) Jhang, (by Mr. R. Clarke, Deputy Commissioner), and Hazára (by Mr. F. W. R. Fryer, Deputy Commissioner). The reports from Rohtak, Hoshiarpur, Jullundur, Gurdaspur, Sialkot, Rawalpindi, and Muzaffargarh are also good ones, and a good report by Jowala Parshad, officiating Tahsildar of Kasur, has been sent up by the Deputy Commissioner.

16. Patterns of the various kinds of cloth usually made have been forwarded from each district, and from these a selection has been made which accompanies this report.

This collection might perhaps be deposited in the Lahore Museum for general reference. The patterns sent from the Ludhiana, Jullundur, and Shahpur districts are especially good and well arranged, the Ludhiana patterns comprising a great variety of the checks and *gambroons* made in that town.

These patterns exhibit both the quality of the fabrics and the colours and patterns with which they are dyed and printed.

I have, &c.,

E. B. FRANCIS,

Offg. Junior Secy. to the Finl. Commr., Punjab.

No. 2528.

FROM

H. C. FANSHAWE, ESQUIRE,
Offg. Junior Secretary to Government,
Punjab and its Dependencies,

To

R. E. YOUNGHUSBAND, ESQUIRE,
Offg. Junior Secretary to Financial Commissioner,
Punjab.

Dated Lahore, 25th September 1885.

Financial.

SIR,

I AM directed to acknowledge the receipt of the Report on the Administration of the License Tax in the Punjab during the past financial year, and in reply to convey the following brief observations.

2. The figures entered on the margin show that the results of the working of the tax during 1884-85 have been very similar to those in 1883-84, as the results in 1882-83 were very similar to those of the preceding year. It is satisfactory to observe that in most cases an improvement has taken place in the framing of the collectors' lists. Attention should continue to be paid to this subject in all districts in which the percentage of the tax abandoned on objections and appeal still continues to be high. The hearing of objections against the assessment of the tax should as far as possible be undertaken by Deputy Commissioners themselves, and should not be left to their assistants, except in cases in which the latter are specially qualified for this work.

	Final Demand. Rs.	*Collections.* Rs.
1881-82	... 4,39,839	4,32,519
1882-83	... 4,36,080	4,34,840
1883-84	... 4,61,740	4,60,473
1884-85	... 4,60,931	4,57,089

The Lieutenant-Governor agrees with the remarks recorded by Colonel Davies regarding the system which has prevailed in the Gujrát District of preparing entirely new assessment lists every year.

3. The attention of the Deputy Commissioner of Karnál should be specially directed to the low incidence of taxation in the towns of Karnál and Pánipat. The assessment of the tax in Firozpur does not appear to be wholly satisfactory as yet, and should be carefully supervised during the next cold weather. The final revision of the collector's list in Ráwalpindi will doubtless receive this year the attention which Major Nisbet had intended to bestow upon it last year, and the Commissioner of the Division should carefully consider the whole question of the adequacy of the assessment of the license tax in the Jhelum, Gujrát, Shahpur and Gujránwála Districts. The subject of the adequacy or inadequacy of the tax does not always meet with the consideration that it requires from Commissioners of Divisions, and the Lieutenant-Governor observes with regret that the reports forwarded by them in the present year are in some cases incomplete, and in several cases practically ignore the remarks of the Financial Commissioner and of the Local Government in reviewing the working of the tax in previous years. The report of the Hoshiárpur District is an extremely unsatisfactory instance to the point, and the Deputy Commissioner should at once be called upon to prepare and submit a full report

with reference to the remarks made upon the assessment of his district in the Provincial Reports and Government reviews of the two last years. Special efforts should be made in the Peshâwar District to put the tax once for all upon a sound and permanent footing, and due regard should be paid by the Deputy Commissioners of Bannu and Hazára to the remarks of the Financial Commissioner upon the assessment of those districts.

4. The Lieutenant-Governor agrees with Colonel Davies that it is most desirable that a special note book should be kept by District Officers for the purpose of recording all investigations made by them in the matter of the assessment of the license tax. In paragraph 5 of the review of last year attention was drawn to the desirability of the maintenance of such a record, and His Honor will be obliged if the Financial Commissioner will now issue special instructions on the subject for the guidance of all officers.

I have, &c.,

H. C. FANSHAWE,

Offg. Junior Secretary to Government, Punjab.

Punjab Govt. Press, Lahore.—26-9-85.—322.

No. 888.

(No. 5763.)

FINANCIAL COMMISSIONER'S OFFICE,

Dated LAHORE, *the* 14*th August* 1885.

FROM

R. E. YOUNGHUSBAND, ESQUIRE,

Officiating Junior Secretary to Financial Commissioner, Punjab,

TO

H. C. FANSHAWE, ESQUIRE,

Offg. Junior Secretary to Government, Punjab.

SIR,

License Tax Report for 1884-85.

I am directed by the Financial Commissioner to submit the Report on the Administration of the License Tax for the year 1884-85, with the usual tabular statements and two maps.

Date of receipt of District and Divisional reports.

2. The District and Divisional reports were all submitted within a few days of the prescribed date, with the exception of the report of the Commissioner of Lahore, which was not received till the 28th July, four weeks after time.

Form of report and statements.

3. As in former years, the report is divided into two parts. Part I. contains the remarks of the Financial Commissioner on the general administration of the tax. Part II. is devoted to a more detailed notice of the reports of those districts in which the administration of the tax calls for special remark.

PART I.

Demand, collection and balance.

	Final demand.	Collections.	Balance.
	Rs.	Rs.	Rs.
1883-84 ...	4,61,740	4,60,473	1,267
1884-85 ...	4,60,931	4,57,809	3,122
Difference ...	—809	—2,664	+1,855

4. The marginal table shows for this and the preceding year the amount of the final demand remaining after remissions and reductions of assessment resulting from orders passed on objections and appeals have been deducted, the collections, and the balance unrealized at the close of the year.

In addition to the collections shown above, Rs. 578 were recovered in 1883-84 and Rs. 880 in 1884-85 on account of fines and penalties imposed by Collectors for failure to pay the tax. The gross collections for these two years were, therefore, Rs. 4,61,051 and Rs. 4,58,689 respectively, showing a decrease of Rs. 2,362 in the year under report. The final demand for 1883-84 was the highest which has been obtained since the passing of Act VI. of 1880; and the demand for 1884-85 was only Rs. 809 less. The principal fluctuations occur in the following districts:—

Decreases.

	Rs.
Ráwalpindi	3,070
Pesháwar	2,500
Montgomery	2,145
Kángra	1,685
Muzaffargarh	1,675
Gujrát	1,650
Amritsar	1,515

Increases.

	Rs.
Siálkot	6,500
Lahore	4,971
Dera Gházi Khan	2,070
Gurdáspur	1,120

In Montgomery, the Deputy Commissioner writes, the decrease is due to the exclusion of cattle-owners who live by the sale of ghi and young stock, and who were improperly taxed in 1883-84. The decrease in Kángra is said to be due partly to the decline of the sapphire trade and partly to over-assessment in the previous two years. Both the Commissioner and Deputy Commissioner anticipate a further decrease in the present year, in order to bring the assessment down to its proper level. The Deputy Commissioner of Amritsar says that the decrease in that district is mainly due to the bankruptcy and partial failure of two or three large firms. The city of Amritsar is, however, in his opinion somewhat under-assessed. He is giving his attention to the assessment of the tax, and a slight rise may be expected during the present and succeeding years. The increase in the Gurdáspur district is satisfactory. In the review of last year's report the Lieutenant-Governor commended the attention which Colonel Harcourt had paid to the administration of the tax in that district. This officer has not relaxed his efforts; and from the careful enquiries made and notes recorded by Mr. Cookson, Assistant Commissioner, he considers that the amount of the tax has not been unduly increased, and he has been able to tax the district for the current year at a sum higher by Rs. 1,000 than the final demand for the year 1884-85. The fluctuations in the other districts above mentioned will be noticed in detail in Part II. of the report.

In eighteen districts the whole demand was collected in full. The only large balances were Rs. 2,060 in Dera Gházi Khan, and Rs. 405 in Pesháwar. Of the latter, Rs. 60 is irrecoverable owing to the insolvency or death of the persons assessed, and the remainder is in train of recovery. Of the balance in Dera Gházi Khan, all except Rs. 10 had been recovered by the time the Deputy Commissioner wrote his report. The causes of this large balance will be more fully explained in the detailed report of that district.

Expenditure.

5. As explained last year, the only direct expenditure connected with the administration of the tax consists of a small sum allotted to each district to cover the temporary employment of such extra establishment as may be required, and for the cost of stationery and other contingencies. The amount so expended in 1884-85 was Rs. 1,123-15-7, as against Rs. 1,390-11-4 in 1883-84.

Taxation in each class and grade.

6. The following table shows the distribution of the tax-payers in each class and grade, and the distribution of the amount paid :—

	Year.	First Class.					Second Class.					Grand Total.
		1st grade.	2nd grade.	3rd grade.	4th grade.	Total.	1st grade.	2nd grade.	3rd grade.	4th grade.	Total.	
Number of tax-payers.	1883-84	21	64	62	222	369	290	1,072	4,853	21,030	27,245	27,614
	1884-85	21	69	64	193	347	292	1,067	4,850	21,129	27,338	27,685
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Amount of tax.	1883-84	10,500	12,800	9,300	22,200	54,800	21,750	53,600	1,21,290	2,10,300	4,06,940	4,61,740
	1884-85	10,500	13,800	9,600	19,300	53,200	21,841	53,350	1,21,250	2,11,290	4,07,731	4,60,931

There are thus 71 more names on the list, while the assessment has decreased by Rs. 809. The chief increase has been in the lowest grade of the second class, while the principal decrease has been in the fourth grade of the first class. The average fee paid for each license, which was Rs. 16-11-6 last year, is now reduced to Rs. 16-10-5. The ratio of persons taxed to the whole population is 1·47 per thousand, as against 1·46 in the previous year.

Objections and appeals.

7. The Financial Commissioner is glad to be able to report that there has in most districts been some improvement in the framing of the collectors' lists, and that less than 9 per cent. of the amount originally charged was abandoned in consequence of successful objections and appeals. This is the lowest percentage which has yet been reached; and the majority of the district reports show that some attention is paid to the revising of the lists. In several districts, however, there has been little, if any, improvement in the matter, and these have kept up the general average of the Province. But whereas the total amount of the collectors' lists in 1883-84 was

Rs. 5,22,615, the amount in 1884-85 was only Rs. 5,05,750; while, as noticed above, the final demand in 1884-85 was less than Rs. 1,000 short of that in 1883-84.

The percentage of the amount abandoned on the hearing of objections and appeals to the original demand shown in the collectors' lists was over 10 per cent. in the following districts :—

Pesháwar	... 20·9 per cent.	D. G. Khan	·17·4 per cent.	Lahore	... 11·8 per cent.
Gurgaon	... 20·5 „	Muzaffargarh	13·2 „	Ráwalpindi	... 11·2 „
Siálkot	... 19·6 „	Kángra	... 13·0 „	Gujrát...	... 10·5 „
Gurdáspur	... 18·2 „	Jhang	... 12·4 „		

The percentage of successful objections and appeals was, it will be seen, highest in the Gurgaon and Pesháwar districts. In Gurgaon Mr. Maconachie says that the large number of successful objections is due to the fact that in the year under report the hearing of the objections was made over to different Extra Assistant Commissioners, who differed very much in their ideas of the rates at which tax-payers should be assessed. Mr. Maconachie, who was not in charge of the district during the year under review, promises to give his attention to the revision of the collectors' lists, and to hear all objections himself; and this, I am to remark, is the right course to pursue. Work of this very important character should not, as a rule, the Financial Commissioner thinks, be left by the District Officer to his assistants. In Pesháwar the Deputy Commissioner has heavy political duties to attend to, in addition to the ordinary work of the district, and it is impossible for him to devote as much attention to the administration of the license tax as might be desired. Mr. Tucker, who only took charge of the district in December 1884, is not responsible for the administration of the tax during the year under review. It must be expected, however, considering the unsatisfactory administration of the tax in this district in previous years, that there will be for some years to come a feeling of opposition to the tax, and consequently a large number of objections in the Pesháwar district. The percentage of successful objections and appeals was also extraordinarily high in Siálkot, Gurdáspur and Dera Gházi Khan. In all three districts the cause was, without doubt, the large increase of assessment, which has already been noticed in para. 4.

Incidence of taxation.

8. The incidence of the final demand for each thousand persons of the whole population was Rs. 24-7-5, as against Rs. 24-8-1 in 1883-84. In the several districts the incidence was as follows, the districts being, as in former reports, classified according to the magnitude of the ratios which their assessment bear to their population :—

Class A.—Over Rs. 40.– Simla, Rs. 188 ; Delhi, Rs. 75.

Class B.—Between Rs. 40 *and Rs.* 30.—Mooltan, Rs. 36 ; Jhang, Rs. 35 ; Amritsar, Rs. 33 ; Muzaffargarh, Rs. 32 ; Umballa, Rs. 31.

Class C.—Between Rs. 30 *and Rs.* 20.—Rohtak, Rs. 29 ; Ludhiána, Rs. 28 ; Lahore, Rs. 26 ; Pesháwar, Rs. 24 ; Dera Ismail Khan, Rs. 24 ; Siálkot, Rs. 24 ; Jullundur, Rs. 24 ; Ráwalpindi, Rs. 23 ; Dera Gházi Khan, Rs. 23 ; Montgomery, Rs. 21 ; Hissar Rs. 20.

Class D.—Between Rs. 20 *and Rs.* 15.—Gurdáspur, Rs. 19 ; Karnál, Rs. 17 ; Hoshiárpur, Rs. 17 ; Ferozepore, Rs. 17 ; Jhelum, Rs.17 ; Shahpur, Rs. 17 ; Gurgaon, Rs. 15.

Class E.—Between Rs. 15 *and Rs.* 10.—Gujránwála, Rs. 14 ; Gujrát, Rs. 13.

Class F.—Below Rs. 10.—Kángra, Rs. 9 ; Bannu, Rs. 9 ; Hazára, Rs. 6 ; Kohát, Rs. 6.

The districts of Siálkot and Dera Gházi Khan have thus risen from class D. to class C., while Rohtak has fallen from class B. to class C.; Gujránwála and Gujrát from class D. to class E.; and Kángra from class E. to class F. A map to illustrate this part of the report is annexed hereto.

Comparison with Census statistics.

9. The following table shows the incidence of the taxation in each district upon every thousand of those sections of the population which are classed in table XII. (*a*) of the Census Returns as commercial and industrial classes, the districts being again classified according to the ratios of their incidence :—

1st Class—Over Rs. 400.—Simla, Rs. 1,469 ; Delhi, Rs. 632.

2nd Class—Rs. 400 *to Rs.* 300.—Muzaffargarh, Rs. 397 ; Ludhiána, Rs. 395 ; Umballa, Rs. 393 ; Jhang, Rs. 355 ; Mooltan, Rs. 348 ; Dera Ismail Khan, Rs. 316 ; Amritsar, Rs. 302.

3rd Class—Rs. 300 *to Rs.* 200.—Rohtak, Rs. 299; Hissar, Rs. 297; Pesháwar, Rs. 290; Siálkot, Rs. 279; Lahore, Rs. 275; Ferozepore, Rs. 268; Ráwalpindi, Rs. 264; Dera Gházi Khan, Rs. 259; Jullundur, Rs. 255; Montgomery, Rs. 231; Gurdáspur, Rs. 224; Shahpur, Rs. 208; Jhelum, Rs. 203.

4th Class—Rs. 200 *to Rs.* 150.—Gurgaon, Rs. 198; Karnál, Rs. 188; Hoshiárpur, Rs. 178; Gujrát, Rs. 177; Bannu, Rs. 176.

5th Class—Below Rs. 150.—Kángra, Rs. 143; Hazára, Rs. 115; Kohát, Rs. 107.

As remarked in last year's report, no useful object would be gained by a separate review of the figures given in this section.

Taxation in towns.

10. The inhabitants of towns having a population of 5,000 and upwards have, in the year under report, paid Rs. 2,06,891, or 44·8 per cent. of the whole taxation, as against 44·7 in 1883-84 and 45·3 per cent. in 1882-83. The incidence of the taxation in towns per thousand of the population has risen slightly from Rs. 99-8-4 to Rs. 99-10-9. The number of persons taxed has increased in a greater ratio than the total amount of the tax, a number of traders who formerly escaped assessment having been included in the lowest grade of the second class during the year under report. In the city of Delhi the number of tax-payers has risen from 676 to 1,110, but the demand has only risen from Rs. 28,195 to Rs. 30,355, the average fee taken for each license sinking in consequence from Rs. 41 to Rs. 27. The low percentage borne by the tax to the municipal income in Sirsa appears to be due to a sudden rise in the municipal income from Rs. 18,546 to Rs. 30,918, caused, no doubt, by the extension of the railway. The low incidence and the small ratio of the taxation to the municipal income in Karnál and Pánipat was noticed last year. It appears probable that these towns do not bear their fair share of taxation. The Deputy Commissioner should see that the traders in them are called upon to pay a fair assessment, and that none who are liable to taxation escape it. There has been a slight rise in the taxation of towns throughout the Umballa district. In Ludhiána there has been a decrease both in the taxation and in the municipal income, due it is said to the diversion of trade to the neighbouring district of Ferozepore, caused by the extension of the railway. The truth of this explanation is rendered probable by the fact that the incomes of all the municipalities in the old Ferozepore district have increased. Notwithstanding this fact, the taxation of the towns in the Ferozepore district has decreased. It is to be feared that the Deputy Commissioner of the latter district has not taken sufficient care to supervise the administration of the tax; his attention will be called to the subject. The number of tax-payers in the towns of the Gurdáspur district has increased by 18; but the amount realized has decreased by Rs. 1,285. This is due to the inclusion of a number of tax-payers in the lower grades of the second class in Batála, and the reduction of the majority of tax-payers of Dehra Nának and Dinanagar from the higher to the lower grades of the second class. The failure of several firms and consequent reduction of the tax in Amritsar city has already been noticed. The Deputy Commissioner, however, considers that the city is at present somewhat under-assessed, and an increase in the assessment may be expected in future. The assessment of the towns in the Lahore district has again risen. The incidence of the tax in Lahore city is now Rs. 74 per thousand. There has been a slight rise in the assessment in the Mooltan district. In Ráwalpindi the incidence of the tax has risen from Rs. 89 to Rs. 134, or by over 50 per cent. On the other hand, there has been a decrease in the assessment of the tax in the Jhelum district; and the sum assessed on the town of Láwa in that district is evidently inadequate. The incidence in the town of Siálkot has risen from Rs. 91 to Rs. 114, and in Siálkot cantonment from Rs. 141 to Rs. 167. There has been a decrease of 162 in the number of tax-payers in the city of Pesháwar, and a decrease of Rs. 2,340 in the amount of the tax.

Assessment lists for 1885-86.

11. The amount of the demand for the year 1885-86 has been stated in some of the district reports, but not in all. Most Deputy Commissioners have paid considerable attention to the preparation and revision of the lists. The few cases in which they have not done so are noticed in the second part of the report. It is too much, however, to expect a fixed and continuous policy of assessment in districts in which the Deputy Commissioner is frequently changed. But the evils necessarily attendant

on a change of District Officers might, so far as the administration of this tax is concerned, be to a great extent lessened if Deputy Commissioners would record notes of their investigations and insist on their subordinates doing the same.

Comparison with treasury accounts.

12. A comparison has been made between the figures stated in the report and those contained in the accounts which are submitted by district treasuries to the Accountant-General, and, in accordance with the wishes of Government, the results of the comparison are here entered. The Accountant-General's office shows the amount of collections on account of the license tax during the year 1884-85 as Rs. 4,78,982, or Rs. 20,293 more than the aggregate of the amounts shown by Deputy Commissioners in their reports. The treasury accounts relate to actual collections made *during* the year under report, while the figures shown in the district reports and in the tabular statements now submitted for the whole Province relate to collections made *on account of* the year under report only; the treasury accounts also include sums which have been at first credited and afterwards refunded on objection or appeal. The deductions to be made from the figures furnished by the Accountant-General's office are as follows:—

Amount refunded during 1884-85	Rs.	24,091
Realized in 1884-85 on account of arrears for 1883-84	„	410
Realized in 1884-85 in advance on account of the demand for 1885-86	„	1,09,957
	Rs.	1,34,458

To this is to be added a sum of Rs. 1,14,165 on account of collections made in 1883-84 in advance on account of the demand for 1884-85. The difference of Rs. 20,293 between the two totals is thus accounted for.

PART II.

13. Having thus reviewed the subject of the license taxation for the year in its general aspect, the Financial Commissioner proceeds to remark on the prominent features in the reports and administration of those districts which call for special notice.

Delhi District.

14. The collectors' lists for 1884-85 in the Delhi district showed a total of Rs. 50,415. This amount was reduced, after the hearing of objections, to Rs. 48,875, giving a slight increase of Rs. 680 over the demand for the previous year. The number of licenses issued in the two years was the same, the average charged in 1884-85 being slightly higher. There was an irrecoverable balance of Rs. 110 at the end of the year, the parties from whom it was due having failed in business and absconded. A sum of Rs. 80 was also realized by way of penalties from eight traders who had not paid the amount of the fees charged by the prescribed date. The assessment lists were all published in the first half of the month of January. They were prepared by the Tahsíldárs with the assistance of the zaildárs, lambardárs and other leading men of their tahsíls under the supervision of Syad Amír Ali, Khán Bahádur, Extra Assistant Commissioner. More care appears to have been taken than in previous years in the preparation of the assessment lists, and the Deputy Commissioner states that although the tax is still unpopular, it is regarded with less discontent than formerly. He has omitted to state the amount of the demand for the current year.

Gurgaon District.

15. The final demand for the Gurgaon district in 1884-85 amounted to Rs. 9,685, as against Rs. 9,985 in 1883-84, Rs. 12,820 in 1882-83, Rs. 17,865 in 1881-82, and Rs. 19,935 in 1880-81. Mr. Maconachie, the Deputy Commissioner, who has but recently been appointed to the district, states that he believes the demand for 1884-85 to be below the real assessment of the district. It is notorious, however, that for the first year or two, after the passing of Act VI. of 1880, the district was over-assessed. The cause of the present low assessment is, in Mr. Maconachie's opinion, first, the fact that the amount originally entered in the lists, the number of objections, and the proportion of successful objections, depend to a great extent on the views of Deputy Commissioners with regard to the way in which the tax is to be assessed, and the degree of strictness with which the law is to be carried out, and perhaps still more on the care they bestow on the revision of the lists and the hearing of objections. The lists for 1884-85 originally showed Rs. 12,165.

The hearing of objections was partly undertaken by Mr. Stogdon, the Deputy Commissioner himself, and partly made over to the Extra Assistant Commissioners. One of the latter, Ziá-ud-dín, appears to have shown undue leniency in the hearing of objections, for he accepted 108 out of 150, a ratio which is out of all proportion to the numbers admitted by the other officers engaged on this work. Mr. Maconachie has determined in future to hear all objections himself. His proposal to keep a note-book in which to record all investigations made with regard to the license tax, village by village, is an excellent one, and the plan might be adopted with advantage by other Deputy Commissioners. Such a record must be most useful to the officer who makes the entries, and invaluable alike to his successor and to his superior officer to whom appeals from his orders are preferred. Mr. Maconachie's suggestion that officers, when assessing at the head-quarters of the firm, a business which has branches in other districts, should communicate with the Deputy Commissioners of the districts in which the branches are situated, is one that has already been prescribed for adoption in Government of India Resolution No. 3601 of 4th October 1883, to which attention was called in Circular No. 51 of 3rd November 1883.

The lists for 1884-85 were published on the 15th January. The initial demand for the current year is Rs. 11,100.

Hoshiárpur District.

16. The Financial Commissioner regrets to find that the Deputy Commissioner of Hoshiárpur has paid but little attention to the remarks made by Colonel McMahon in last year's report, and by His Honor the Lieutenant-Governor in the review of the report, with regard to the administration of the tax in the Hoshiárpur district. It was the opinion both of the Officiating Financial Commissioner and of the Lieutenant-Governor that the assessment in Hoshiárpur was inadequate; and if Mr. Knox was unable to agree in this opinion, and considered it unadvisable to raise the assessment, he should have submitted a full report, explaining his reasons for considering the assessment a fair one. But in spite of the fact that the Commissioner, Colonel Young, particularly asked him to make a full report on the causes of the light incidence of the tax in his district, the Financial Commissioner regrets to observe that the report is extremely meagre and unsatisfactory.

The final demand was raised from Rs. 15,350 to Rs. 15,490. The number of licenses issued has increased from 1,013 to 1,030, and the number of villages showing taxation is now 364, as against 255 in the previous year. The Financial Commissioner is unable to understand Mr. Knox's explanation of the reason of the decrease in the number of licenses issued to manufacturers of sugar. Mr. Knox says :—" Sugar yielded less profit this year than the year before owing to its cheapness, caused by the large proportion of sugar-cane in the district." It is difficult to believe that an abundant sugar-cane harvest could have caused loss to the sugar manufacturers. The demand for the current year is Rs. 16,435.

Ferozepore District.

17. The final demand for the Ferozepore district, which now includes the Fázilka tahsíl of the late Sirsa district, shows an increase of only Rs. 85 over the demand for the same area last year. That this is not a full assessment there is little doubt. The Deputy Commissioner of Ludhiána reports that trade is being gradually diverted from Ludhiána to the neighbouring district of Ferozepore owing to the extension of the Rewári-Ferozepore Railway; and his statement is confirmed by the remarks contained in a diary lately submitted to the Financial Commissioner by Mr. Harris, Sub-Judge of Ferozepore. Baron Bentinck, the present Deputy Commissioner, has only recently relieved Colonel Corbyn, and is unable to explain the reason of the low incidence of the tax in this district. It is unsatisfactory, however, to note that no supervision appears to have been exercised over the working of the Tahsíldárs by the Deputy Commissioner or any of his subordinates. The collectors' lists for 1885-86 show a demand of Rs. 15,385 as against an initial demand of Rs. 13,795 in 1884-85; but it is impossible to say what sum will be remitted on the hearing of objections and appeals.

Lahore District.

18. In the district of Lahore the lists were very carefully revised by the Tahsíldárs, under the immediate supervision of the Deputy Commissioner, with the assistance of Syad

Alam Shah and Rái Thandi Rám, Extra Assistant Commissioners, the result being an increase of Rs 5,990 in the collectors' lists, and of Rs. 4,971 in the final demand. The increase in the amount of the collectors' lists was followed by a large influx of objections, of which 31 per cent. were successful, reducing the demand from Rs. 28,020 to Rs. 24,716. Nearly half the enhancement occurred in the city of Lahore. The collectors' lists for 1885-86 show a total of Rs. 30,868, being an increase of Rs. 2,840 on the initial demand for 1884-85. Nearly the whole of this increase is due to assessments made in the city of Lahore; and the Financial Commissioner considers that the Deputy Commissioner is justified in asserting that neither the city nor the district can now be said to be under-assessed.

Mooltan District.

19. As in the previous year, the collection lists for the year 1884-85 were carefully revised by the Tahsíldárs and tested by the Extra Assistant Commissioners Karm Chand, Nasír-ud-dín, and Rahm Shah, except in the Shujabad tahsíl, where the demand was somewhat recklessly increased. Out of a total reduction of Rs. 1,120 allowed on objections and appeals from assessments, no less than Rs. 680 were remitted in the Shujabad tahsíl alone. In the other four tahsíls the number of objections and appeals was few. The final demand stood at Rs. 20,180, giving an increase of Rs. 725 over that for the previous year. The incidence of taxation in the district is now Rs. 36-8-11. In the town of Shujabad the incidence has risen from Rs. 154 to Rs. 171 per thousand of the population. Major Hutchinson has omitted to state the amount of the demand for 1885-86.

Jhang District.

20. The final demand for the Jhang district was Rs. 490 less than in the previous year, and the incidence per thousand of the population has fallen from Rs. 36 to Rs. 35. The Deputy Commissioner considers that the assessment is still too high. The collectors' lists showed a demand of Rs. 15,815. Two hundred and eighty-four objections were preferred, of which 124 were successful, involving a reduction of Rs. 1,940. The objections were heard by the Deputy Commissioner, Mr. R. Clarke, and after his departure, by his successor, Mr. Dames. Only two appeals were preferred, of which one was successful. Mr. Dames considers that the small number of appeals shows that the tax is not felt to be as heavy a burden as it has been in past years. Lists for the current year, showing a demand of Rs. 13,980, were prepared in January and issued in February. A considerable number of objections were lodged. About 100 of these had been disposed of at the time that the district report was written, and exemptions had been granted to the amount of Rs. 410. The final demand for 1885-86 will therefore show a still further reduction below the demand for the year under report.

Ráwalpindi District.

21. There has been again this year a large decrease of Rs. 3,070 in the final demand for the Ráwalpindi district. In 1883-84 the collectors' lists showed a demand of 28,825, which was ultimately reduced to Rs. 22,275. For the year under report the collectors' lists were carefully revised by the Tahsíldárs, scrutinized in the district office, and ultimately tested by Major Nisbet, the Deputy Commissioner, when in camp in December 1883 and the following months. The lists for the Pindigheb and Attock tahsíls were published in February. The lists for all the other tahsíls were published in January. In spite of the care which had been taken in the preparation of the lists, 562 objections were preferred, of which 184 were successful, involving a reduction of Rs. 2,295. Rs. 125 were also remitted on appeal. Major Nisbet states that the large number of successful objections was due to the fact that he was transferred to officiate as Commissioner of Delhi in April 1884, and that the officer who succeeded him and heard the objections had not the same local knowledge as that possessed by him. It is unfortunate that the care bestowed by Major Nisbet on his inquiries should have been to some extent thrown away; but if he had made notes of his investigations, so much of his labour would not perhaps have been spent in vain.

Jhelum District.

22. In the Jhelum district there has been again a falling off in the final demand of Rs. 890. The Deputy Commissioner has made no attempt to explain the cause of this decrease, beyond the remark that it "is chiefly due to dulness of trade." Nor is any explanation

offered by the Commissioner either in the case of Jhelum or in that of any one of the other four districts of his division in which the demand has fallen. The inadequacy of the assessment in the small town of Láwa has already been noticed. Most of the towns in this district would appear to be very lightly assessed. In the large town of Jhelum the incidence per thousand of the population is only Rs. 71. Notwithstanding the lightness of the assessment, 239 objections were lodged against the collectors' lists, of which 71 were successful. The Deputy Commissioner has not stated the amount of the initial demand either for the year under report or for the current year.

Gujrát District.

23. The Officiating Deputy Commissioner of Gujrát has submitted a very careful report on the administration of the tax in that district. He only joined the district after the close of the year under report, but he has evidently bestowed much attention on the subject. The final demand for 1883-84 was Rs. 11,230. But the collectors' lists for 1884-85 only showed a demand of Rs. 10,710. Mr. Meredith says that owing to the strict injunctions issued at the instance of the Commissioner of the division against over-assessment, the Tahsíldárs were perhaps too cautious in preparing the lists of the year under report. After the disposal of objections and appeals, the final demand stood at Rs. 9,580. The incidence of the tax per thousand of the population is only Rs. 13-14-5. The amount realized for 1884-85 is, the Financial Commissioner thinks, undoubtedly less than the traders of the Gujrát district can afford to pay. Last cold weather the collectors' lists for 1885-86 were carefully checked, under the orders of the Deputy Commissioner, by Sayad Amír Ali, Extra Assistant Commissioner, while in camp. The demand for 1885-86 is Rs. 12,505. Mr. Meredith says that the tax is as unpopular and the mode of assessment as unsatisfactory as ever. This fact is easily intelligible when it is read by the light of his statement that the Tahsíldárs prepare new lists each year regardless of the lists showing the final demand of the previous year. As long as the tax is thus arbitrarily raised or lowered and the assessment is made on no fixed principle and the District Officer takes no interest in its administration, the tax is sure to be unpopular. When, however, the tax is assessed after careful investigation, it will vary but little in amount from year to year, and the people will become accustomed and reconciled to it.

Shahpur District.

24. The final demand for the Shahpur district showed a decrease of Rs. 140 over that for the previous year. The figures for the last four years have been—1881-82, Rs. 7,015; 1882-83, Rs. 7,515; 1883-84, Rs. 7,605; 1884-85, Rs. 7,465. The assessment has, therefore, remained fairly steady. As explained in the report for 1883-84, the collectors' lists for 1884-85 in tahsíl Shahpur were not revised at all; those in tahsíl Khushab were revised hurriedly and carelessly at tahsíl head-quarters, while the Tahsíldár of Bhera fell into the opposite mistake, and added to his lists the names of a number of persons who should never have been entered on them, some, in fact, who had been specially exempted the previous year. As the Deputy Commissioner and all three Tahsíldárs were transferred from the district during the cold weather of 1883-84, it would serve no useful purpose to make further inquiries into the matter. The Financial Commissioner regrets to observe, however, that in discussing the subject of the collectors' lists for 1885-86, Mr. Gardiner appears to think that the preparation and revision of these lists is a matter to be left entirely to the Tahsíldárs. Mr. Gardiner criticises the working of his Tahsíldárs, but has not apparently made any attempt to remedy the defects which he notices. He should remember that the Deputy Commissioner is just as much responsible for the preparation and revision of the lists as for any other part of the administration of the tax. It is impossible for the tax ever to be established on a sound basis unless Deputy Commissioners will personally interest themselves in the revision of these lists. There were 183 objections lodged in the year under report, of which 39 were successful. All the objections were heard by the Deputy Commissioner himself. The collectors' lists for 1885-86 show a demand of Rs. 9,700, but the Deputy Commissioner considers that the assessment in Khushab, which is still suffering from the effects of the late drought, is much too high.

Gujránwála District.

25. The Financial Commissioner remarks with regret that the report furnished by the Deputy Commissioner of Gujránwála (Mr. Silcock) is extremely meagre. In the Provincial report for

last year, Colonel McMahon, the Officiating Financial Commissioner, remarked that the incidence of the tax in the towns of the Gujránwála district was low, and that unless the Deputy Commissioner was prepared to revise the assessment, he should give his reasons for considering it adequate. But in spite of the fact that the final demand for 1884-85 is only Rs. 9,250, as against Rs. 9,555 in 1883-84, the incidence per thousand falling in consequence from Rs. 15-7-9 to Rs. 14-15-10, no explanation of the decrease has been offered by either the Deputy Commissioner or the Commissioner. The collectors' lists showed a demand of Rs. 9,830, which was reduced on the hearing of objections and appeals to Rs. 9,250. The lists were revised by the Tahsíldárs with the help of zaildárs and members of Municipal Committees, and finally examined by the then Deputy Commissioner Mr. Trafford before publication. Mr. Silcock has omitted to state the amount of the initial demand for 1885-86. His attention will be drawn to the remarks contained in last year's report, and he will be requested to devote special attention to the subject of the assessment of the tax during the ensuing cold weather.

Siálkot District.

26. As anticipated in last year's report, there has been a remarkable increase in the proceeds of the tax in the Siálkot district, the final demand of which was Rs. 25,040, and the incidence per thousand of the population Rs. 24-11-10 in 1884-85. The incidence for the whole Province is Rs. 24-7-5; and the Financial Commissioner considers that the increase was justified by the previous low assessment of this district. After the lists had been revised by the Tahsíldárs, they were, it is stated, carefully tested by Rái Pohlu Mal, Extra Assistant Commissioner, and by the Deputy Commissioner. The demand shown in the collectors' lists was Rs. 31,150. In the face of this large and sudden increase, it was not unnatural that as many as 1,003 objections were lodged. Rs. 5,160 were reduced on the hearing of objections, and Rs. 950 more on appeal. The reduction of so large a sum would seem to show that sufficient caution was not exercised in the revision and scrutiny of the lists. The collectors' lists for 1885-86 are reported to have been carefully prepared, and show a demand of Rs. 28,465.

Dera Gházi Khan District.

27. The original demand of the Dera Gházi Khan district for 1884-85 stood at Rs. 6,310, but in June 1884 Major Plowden, who had just taken over charge of the district, when writing the report for the license tax for 1883-84, noticed that the demand on account of the tax in his district was considerably below the sums assessed on the same account in the neighbouring districts of Dera Ismail Khan and Muzaffargarh. He accordingly issued notices under Section 10 of Act II. of 1878, calling upon all persons who were liable to be taxed and whose names had not been entered in the collectors' lists to come forward and pay the fees for which they were liable under the Act. No one having come forward, he proceeded to revise the lists and raised the demand from Rs. 6,310 to Rs. 10,135. As many as 392 objections were preferred against this new assessment, with the result that the demand was reduced to Rs. 8,370. Twenty-four appeals have been lodged in the Commissioner's court, but owing to the late date on which the revised lists were published, the appeals were not instituted till after the close of the year, and have not been yet decided. The demand for the current year has been fixed at Rs. 10,785. Major Plowden adds that the lowness of the assessment of the tax in the Dera Gházi Khan district, as compared with the districts of Muzaffargarh and Dera Ismail Khan, was due to the fact that his predecessors had not taken sufficient personal interest in the subject. He forgets, however, that it was stated in the report for 1883-84 that the Deputy Commissioners of both Muzaffargarh and Dera Ismail Khan thought that their districts were assessed too highly, an opinion which has apparently been justified by the decrease in the assessment of both districts during the year under report; while, on the other hand, Mr. Fryer had raised the demand in Dera Gházi Khan during the year 1883-84 from Rs. 4,320 to Rs. 6,300. Comparing the demand for 1885-86, Rs. 10,785, with that for 1882-83, Rs. 4,320, it will be seen that the tax has been increased by 150 per cent. within three years. The incidence per thousand of the population in 1884-85 was Rs. 23, and this is probably quite as much as the district can afford to pay. Owing to the lateness of the date on which the revised lists were published, there was a

balance outstanding at the end of the year of Rs. 2,060. This had all been recovered at the time that the district report was written, with the exception of one small item of Rs. 10.

Bannu District.

28. The proceeds of the tax in the Bannu district have steadily decreased during the last four years. The final demand for the year 1884-85 was Rs. 3,260, as against Rs. 3,300 in 1883-84, Rs. 3,520 in 1882-83, and Rs. 3,665 in 1881-82. The collectors' lists for 1884-85 showed a demand of Rs. 3,595. The demand for the current year is Rs. 3,360. The lists were revised by the Tahsíldár and then examined by the Deputy Commissioner. The Commissioner considers that the tax might fairly be increased in the Bannu district. This view is shared by the Financial Commissioner, who expects that the Deputy Commissioner will give his careful attention to the assessment of the tax during the ensuing cold weather.

Muzaffargarh District.

29. The final demand in the Muzaffargarh district during the year under report was Rs. 11,085, as against Rs. 12,760 in the previous year. This decrease of Rs. 1,675 is said to have been chiefly due to two causes—1st, the improper inclusion of incomes derived from land held in mortgage, possession of which remains with the mortgagee, and the revenue of which is also paid by him, 2ndly, reductions granted on account of agricultural distress on the Indus side of the Muzaffargarh tahsíl. The amount shown in the collectors' lists was Rs. 12,650, of which Rs. 1,565 were reduced on the hearing of objections. Mr. Brown, the Deputy Commissioner, instead of writing a report, has forwarded an elaborate memorandum drawn up by Mr. Benton before he left the district in November 1884. With reference to Mr. Benton's contention that the lists when prepared by the Tahsíldár ought not to be scrutinized and amended if necessary by the Deputy Commissioner or his Assistants, the Financial Commissioner desires to express his concurrence in the opinion recorded by Mr. Lyall in the report for 1880-81, which is entirely borne out by the wording of Section 10 of the Act. It is of course not expected that the Deputy Commissioner should test the correctness of every entry with the same amount of care as if he were hearing an objection; but it is not difficult for him, when in camp, to test the general accuracy of the lists by personal enquiry on the spot before he allows them to be published; the Deputy Commissioner *must* recognise his responsibility for the preparation of the lists. Reference has already been made to Mr. Maconachie's suggestion that a special note-book should be kept in which to record facts affecting the assessment of the tax and the position of traders, and the Financial Commissioner commends this suggestion to the consideration of all Deputy Commissioners. The amount of the collectors' lists for 1885-86 is not given by Mr. Brown. The Commissioner states that it is Rs. 11,085, which is exactly the same as the amount of the final demand for 1884-85.

Pesháwar District.

30. The administration of the tax in the Pesháwar district was unfavourably noticed in last year's report and in the Government review of the report. In 1884-85 the final demand fell to Rs. 14,580, and the incidence to Rs. 24 per thousand of the population. The collectors' lists showed a demand of Rs. 18,445, which was reduced by Rs. 3,865 after the disposal of objections and appeals. Mr. Tucker, the present Deputy Commissioner, only took over charge of the district in December 1884, and is not responsible for the administration of the tax during the year under report. He writes:—"The tax is a very unsatisfactory one, and it is difficult to deal with objections. The consequence is that many men get off who can well afford to pay." He also states that the incidence of the tax is very unequal in different parts of the district. Mr. Tucker is, however, making inquiries with a view to a more equal assessment in 1886-87. The Financial Commissioner trusts that he will not relax his endeavours till he has placed the assessment of the tax upon a satisfactory footing, a position it has never yet assumed. The Financial Commissioner thinks that the Deputy Commissioner is probably right in saying that the district is at present under-assessed, but so long as violent fluctuations occur in the demand from year to year, it is difficult to form any very definite opinion on the subject. There was a large balance of Rs. 625 at the close of the year. Of this amount Rs. 180 has since been recovered, Rs. 150 has been remitted on appeal, and the remainder is said to be irrecoverable.

31. The final demand in the Hazára district was Rs. 2,645 in 1884-85, as against Rs. 2,700 in 1883-84. As noticed in last year's report, there has been a gradual decline in the assessment of this district for several years. The present assessment is, as the Deputy Commissioner admits, undoubtedly too low. The collectors' lists for 1885-86 show a demand of Rs. 3,030. The Deputy Commissioner also admits that the revision of the lists in 1884-85 was done in a very perfunctory manner, and the Financial Commissioner trusts that Mr. Fryer, who was not responsible for the assessment of the tax during the period under review, will devote special attention to the subject and see that his Tahsíldárs do the same.

Hazára District.

32. In the Kohát district also the proceeds of the tax appear to be below the amount which the district is capable of yielding. There was a slight increase of Rs. 65 during the year under report, the final demand standing at Rs. 1,175. Outside the town of Kohát there were in 1883-84 only six villages in which traders were assessed, yielding a revenue of Rs. 100. These figures were increased during the year under report to 16 villages paying Rs. 235. There was, however, a decrease of Rs. 70 in the amount assessed on the town of Kohát. The collectors' lists for 1885-86 show a demand of Rs. 1,250.

Kohát District.

33. In conclusion, I am to say that although there are some districts in which the assessment of the tax still requires to be carefully revised, the Financial Commissioner considers that as a whole good progress has been made in placing its administration on a satisfactory footing. Greater attention is being paid by District Officers and their subordinates to the careful and equitable assessment of the tax. As a consequence, fluctuations are becoming less violent, inequalities are being redressed, and the pressure of this form of taxation is by degrees being more fairly distributed among those by whom it is payable throughout the Province. There is reason to expect that the nearer we attain to this object, the less will be the unpopularity of the tax.

Concluding remarks.

I have, &c.,

R. E. YOUNGHUSBAND,

Offg. Junior Secretary to Finl. Commissioner, Punjab.

ABSTRACT OF FORM No. I.

STATEMENT SHOWING DEMANDS AND COLLECTIONS OF EACH CLASS AND GRADE UNDER THE LICENSE TAX ACT OF 1878 IN THE PUNJAB, DURING THE YEAR 1884-85.

CLASS AND GRADE.	Fees for each grade.	COLLECTORS' LISTS.		PETITIONS OF OBJECTIONS.		APPEALS.		Amount of remissions to persons carrying on business for portion of year only.	FINAL DEMAND.		PENALTIES BY COLLECTORS.		FINES BY MAGISTRATES.		COLLECTIONS.					REMARKS.	
		Number charged.	Amount charged.	Number of objections.	Amount charged after disposal of objections.	Number of appeals.	Amount charged after disposal of appeals.		Number of licenses.	Amount of fees charged	Number.	Amount of penalties.	Number.	Amount of fines.	Fees.	Penalties.	Fines.	Total.	Balance.		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
CLASS I.			Rs.		Rs.		Rs.	Rs.		Rs.		Rs.		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Population	1,88,42,264
1st Grade ...	500	24	12,000	8	10,500	...	10,500	...	21	10,500	...	...	...	...	10,500	...	...	10,500	...	No. of villages (a) ...	35,512
2nd ,, ...	200	71	14,200	13	13,600	2	13,800	...	69	13,800	...	...	...	...	13,800	...	...	13,800	...	No. of towns	... 137
3rd ,, ...	150	72	10,800	23	9,750	2	9,600	...	64	9,600	...	...	...	...	9,600	...	...	9,600	...	Total ...	35,649
4th ,, ...	100	214	21,400	61	19,400	3	19,300	...	193	19,300	...	...	...	...	19,300	...	...	19,300	...	No. of villages in which there are licenses.	5,927
Total ...	...	381	58,400	105	53,250	7	53,200	...	347	53,200	...	...	...	...	53,200	...	...	53,200	...	No. of tax-payers per 1,000 of population.	1·47
CLASS II.																					
1st Grade ...	75	318	23,850	98	21,900	6	21,900	59	292	21,841	...	...	...	...	21,766	...	...	21,766	75	Incidence of taxation per 1,000 of population.	24-7-5
2nd ,, ...	50	1,211	60,550	379	53,700	23	53,350	...	1,067	53,350	...	...	...	...	53,350	...	...	53,350	...		
3rd ,, ...	25	5,334	1,33,350	1,414	1,22,325	93	1,21,250	...	4,850	1,21,250	8	250	...	...	1,20,978	250	...	1,21,228	272		
4th ,, ...	10	22,960	2,29,600	5,844	2,12,700	298	2,11,300	10	21,129	2,11,290	*73	715	207	686	2,08,515	625	5	2,09,145	2,775		
Total ...	...	29,823	4,47,350	7,735	4,10,625	420	4,07,800	69	27,338	4,07,731	81	965	207	686	4,04,609	875	5	4,05,489	3,122		
GRAND TOTAL ...		30,204	5,05,750	7,840	4,63,875	427	4,61,000	69	27,685	4,60,931	81	965	207	686	4,57,809	875	5	4,58,689	3,122		

(a) Towns having a population of less than 5,000 inhabitants are classed as villages.

STATEMENT showing DEMAND and COLLECTIONS in Detail of each CLASS

Division.	District.	Class.	Grade.	Fees for each grade.	Collectors' Lists.		Petitions of Objections.		Appeals.		Remissions.
					Number charged.	Amount charged.	Number of objections.	Amount charged.	Number of appeals.	Amount charged.	Amount of remissions to persons carrying on business for portion of year only.
DELHI.	DELHI.	I. ...	1st Grade...	500	8	4,000	2	3,500	...	3,500	...
		,, ...	2nd ,, ...	200	16	3,200	1	3,200	...	3,200	...
		,, ...	3rd ,, ...	150	7	1,050	1	1,050	...	1,050	...
		,, ...	4th ,, ...	100	35	3,500	1	3,600	...	3,600	...
		Total ...	...	...	66	11,750	5	11,350	...	11,350	...
		II. ...	1st Grade...	75	43	3,225	2	3,225	...	3,225	...
		,, ...	2nd ,, ...	50	164	8,200	29	7,700	3	7,600	...
		,, ...	3rd ,, ...	25	542	13,550	73	13,175	5	13,200	...
		,, ...	4th ,, ...	10	1,369	13,690	124	13,520	5	13,500	...
		Total ...	...	...	2,118	38,665	228	37,620	13	37,525	...
	Grand Total ...		...	...	2,184	50,415	233	48,970	13	48,875	...
	GURGAON.	I. ...	1st Grade...	500	...	...	...	...	...	...	...
		,, ...	2nd ,, ...	200	1	200	1	200	...	200	...
		,, ...	3rd ,, ...	150	1	150	1	...	...	...	...
		,, ...	4th ,, ...	100	1	100	1	100	...	100	...
		Total ...	...	...	3	450	3	300	...	300	...
		II. ...	1st Grade...	75	3	225	1	300	...	300	...
		,, ...	2nd ,, ...	50	28	1,400	21	700	1	700	...
		,, ...	3rd ,, ...	25	158	3,950	83	2,800	8	2,725	...
		,, ...	4th ,, ...	10	614	6,140	184	5,650	8	5,660	...
		Total ...	...	...	803	11,715	289	9,450	17	9,385	...
	Grand Total ...		...	...	806	12,165	292	9,750	17	9,685	...
	ROHTAK.	I. ...	1st Grade...	500	1	500	...	500	...	500	...
		,, ...	2nd ,, ...	200	3	600	...	600	...	600	...
		,, ...	3rd ,, ...	150	8	1,200	...	1,200	...	1,200	...
		,, ...	4th ,, ...	100	2	200	2	200	...	200	...
		Total ...	...	...	14	2,500	2	2,500	...	2 500	...
		II. ...	1st ,, ...	75	8	600	...	600	...	600	...
		,, ...	2nd ,, ...	50	41	2,050	2	2,050	...	2,050	...
		,, ...	3rd ,, ...	25	176	4,400	28	4,200	...	4,200	...
		,, ...	4th ,, ...	10	692	6,920	56	6,870	1	6,870	...
		Total ...	...	...	917	13,970	86	13,720	1	13,720	...
	Grand Total ...		...	...	931	16,470	88	16,220	1	16,220	...

AND GRADE UNDER THE LICENSE TAX ACT OF 1878, DURING THE YEAR 1884-85.

Final Demand.		Penalties by Collectors.		Fines by Magistrates.		Collections.					Remarks.
Number of licenses.	Amount charged.	Number of penalties.	Amount of penalties.	Number.	Amount of fines.	Fees.	Penalties.	Fines.	Total.	Balance.	
7	3,500	...	...	...	...	3,500	...	...	3,500	...	Population 6,43,515
16	3,200	...	...	...	...	3,200	...	...	3,200	...	No. of villages 701
7	1,050	...	...	...	...	1,050	...	...	1,050	...	No. of villages in which there are licenses. 204
36	3,600	...	...	...	...	3,600	...	...	3,600	...	
66	11,350	...	...	..	...	11,350	...	...	11,350	...	No. of tax-payers per 1,000 of population. 3·32
43	3,225	...	...	...	...	3,225	...	...	3,225	...	Incidence of taxation per 1,000 of population. 75/15/2
152	7,600	...	...	...	...	7,600	...	...	7,600	...	
528	13,200	...	...	...	...	13,150	...	...	13,150	50	
1,350	13,500	8	80	...	...	13,440	80	...	13,520	60	
2,073	37,525	8	80	...	...	37,415	80	...	37,495	110	
2,139	48,875	8	80	...	...	48,765	80	...	48,845	110	
...	...	...	...	...	...	...	...	...	...	...	Population 6,41,848
1	200	...	...	...	...	200	...	...	200	...	No. of villages 1,160
...	...	...	...	...	...	...	...	...	...	...	No. of villages in which there are licenses. 142
1	100	...	...	...	...	100	...	...	100	...	
2	300	...	...	...	...	300	...	...	300	...	No. of tax-payers per 1,000 of population. 1·08
4	300	...	...	...	...	300	...	...	300	...	Incidence of taxation per 1,000 of population. 15/1/5
14	700	...	...	...	...	700	...	...	700	...	
109	2,725	2	25	...	...	2,725	25	...	2,750	...	
566	5,660	21	125	...	...	5,660	125	...	5,785	...	
693	9,385	23	150	...	...	9,385	150	...	9,535	...	
695	9,685	23	150	...	...	9,685	150	...	9,835	...	
1	500	...	...	...	...	500	...	...	500	...	Population 5,53,669
3	600	...	...	...	...	600	...	...	600	...	No. of villages 486
8	1,200	...	...	...	...	1,200	...	...	1,200	...	No. of villages in which there are licenses. 179
2	200	...	...	...	...	200	...	...	200	...	
14	2,500	...	...	...	...	2,500	...	...	2,500	...	No. of tax-payers per 1,000 of population. 1·65
8	600	...	...	...	...	600	...	...	600	...	Incidence of taxation per 1,000 of population. 20/4/9
41	2,050	...	...	...	...	2,050	...	...	2,050	...	
168	4,200	...	...	...	...	4,200	...	...	4,200	...	
687	6,870	...	...	...	...	6,870	...	...	6,870	...	
904	13,720	...	...	...	...	13,720	...	...	13,720	...	
918	16,220	...	...	...	...	16,220	...	...	16,220	...	

STATEMENT SHOWING DEMAND AND COLLECTIONS IN DETAIL OF EACH CLASS

Division.	District.	Class.	Grade.	Fees for each grade.	Collectors' Lists.		Petitions of Objections.		Appeals.		Remissions.
					Number charged.	Amount charged.	Number of objections.	Amount charged.	Number of appeals.	Amount charged.	Amount of remissions to persons carrying on business for portion of year only.
DELHI—*continued.*	HISSAR.	I. ...	1st Grade...	500	1	500	1	500	...	500	...
		,, ...	2nd ,, ...	200	3	600	...	600	...	600	...
		,, ...	3rd ,, ...	150	3	450	1	300	...	300	...
		,, ...	4th ,, ...	100	4	400	...	400	...	400	...
		Total ...	...	...	11	1,950	2	1,800	...	1,800	...
		II. ...	1st Grade...	75	11	825	...	825	...	825	...
		,, ...	2nd ,, ...	50	32	1,600	2	1,500	...	1,500	...
		,, ...	3rd ,, ...	25	145	3,625	8	3,650	...	3,650	...
		,, ...	4th ,, ...	10	600	6,000	51	5,850	...	5,850	...
		Total ...	...	...	788	12,050	61	11,825	...	11,825	...
	GRAND TOTAL ...		...	...	799	14,000	63	13,625	...	13,625	...
	KARNAL.	I. ...	1st Grade...	500	...	...	...	...	...	...	...
		,, ...	2nd ,, ...	200	...	...	...	...	...	...	...
		,, ...	3rd ,, ...	150	...	...	...	...	...	...	...
		,, ...	4th ,, ...	100	...	...	...	...	...	...	...
		Total ...	...	...	...	...	...	...	...	...	...
		II. ...	1st Grade...	75	2	150	...	150	...	150	...
		,, ...	2nd ,, ...	50	15	750	3	650	...	650	...
		,, ...	3rd ,, ...	25	121	3,025	15	2,875	...	2,875	...
		,, ...	4th ,, ...	10	704	7,040	54	6,960	1	6,960	...
		Total ...	...	...	842	10,965	72	10,635	1	10,635	...
	GRAND TOTAL ...		...	...	842	10,965	72	10,635	1	10,635	...
	UMBALLA.	I. ...	1st Grade...	500	...	...	...	...	...	...	...
		,, ...	2nd ,, ...	200	6	1,200	1	1,000	...	1,000	...
		,, ...	3rd ,, ...	150	5	750	1	900	...	900	...
		,, ...	4th ,, ...	100	20	2,000	7	1,900	...	1,900	...
		Total ...	...	...	31	3,950	9	3,800	...	3,800	...
		II. ...	1st Grade...	75	39	2,925	12	2,850	1	2,850	...
		,, ...	2nd ,, ...	50	107	5,350	26	5,150	2	5,150	...
		,, ...	3rd ,, ...	25	426	10,650	74	10,275	3	10,250	...
		,, ...	4th ,, ...	10	1,248	12,480	228	11,760	2	11,760	...
		Total ...	...	...	1,820	31,405	340	30,035	8	30,010	...
	GRAND TOTAL ...		...	...	1,851	35,355	349	33,835	8	33,810	...

AND GRADE UNDER THE LICENSE TAX ACT OF 1878, DURING THE YEAR 1884-85—*continued.*

Final Demand.		Penalties by Collectors.		Fines by Magistrates.		Collections.					Remarks.
Number of licenses.	Amount charged.	Number of penalties.	Amount of penalties.	Number.	Amount of fines.	Fees.	Penalties.	Fines.	Total.	Balance.	
1	500	...	...	...	...	500	...	...	500	...	Population 6,60,787
3	600	...	...	...	...	600	...	...	600	...	No. of villages 942
2	300	...	...	...	...	300	...	...	300	...	No. of villages in which there are licenses. 175
4	400	...	...	...	...	400	...	...	400	...	No. of tax-payers per 1,000 of population. 1·18
10	1,800	...	...	...	...	1,800	...	...	1,800	...	
11	825	...	...	...	...	825	...	...	825	...	Incidence of taxation per 1,000 of population. 20/9/11
30	1,500	...	...	...	...	1,500	...	...	1,500	...	
146	3,650	...	...	...	...	3,650	...	...	3,650	...	
585	5,850	1	10	...	...	5,850	10	...	5,860	...	
772	11,825	1	10	...	...	11,825	10	...	11,835	...	
782	13,625	1	10	...	...	13,625	10	...	13,635	...	
...	...	...	...	...	...	...	...	...	...	...	Population 6,22,621
...	...	...	...	...	...	...	...	...	...	...	No. of villages 863
...	...	...	...	...	...	...	...	...	...	...	No. of villages in which there are licenses. 238
...	...	...	...	...	...	...	...	...	...	...	No. of tax-payers per 1,000 of population. 1·32
...	...	...	...	...	...	...	...	...	...	...	Incidence of taxation per 1,000 of population. 17/1/4
2	150	...	...	...	...	150	...	...	150	...	
13	650	...	...	...	...	650	...	...	650	...	
115	2,875	...	...	...	...	2,875	...	...	2,875	...	
696	6,960	...	...	1	5	6,960	...	5	6,965	...	
826	10,635	...	...	1	5	10,635	...	5	10,640	...	
826	10,635	...	...	1	5	10,635	...	5	10,640	...	
...	...	...	...	...	...	...	...	...	...	...	Population 10,67,263
5	1,000	...	...	...	...	1,000	...	...	1,000	...	No. of villages 2,226
6	900	...	...	...	...	900	...	...	900	...	No. of villages in which there are licenses. 249
19	1,900	...	...	...	...	1,900	...	...	1,900	...	No. of tax-payers per 1,000 of population. 1·64
30	3,800	...	...	...	...	3,800	...	...	3,800	...	Incidence of taxation per 1,000 of population. 31/10/10
38	2,850	...	...	...	...	2,850	...	...	2,850	...	
103	5,150	...	...	...	...	5,150	...	...	5,150	...	
410	10,250	3	150	...	...	10,250	150	...	10,400	...	
1,176	11,760	3	60	...	...	11,760	60	...	11,820	...	
1,727	30,010	6	210	...	...	30,010	210	...	30,220	...	
1,757	33,810	6	210	...	...	33,810	210	...	34,020	...	

STATEMENT SHOWING DEMAND AND COLLECTIONS IN DETAIL OF EACH CLASS

Division.	District.	Class.	Grade.	Fees for each grade.	Collectors' Lists.		Petitions of Objections		Appeals.		Remissions.
					Number charged.	Amount charged.	Number of objections.	Amount charged.	Number of appeals.	Amount charged.	Amount of remissions to persons carrying on business for portion of year only.
DELHI—*concluded.*	SIMLA.	I. ...	1st Grade...	500	4	2,000	...	2,000	...	2,000	...
		,, ...	2nd ,, ...	200	3	600	...	600	...	600	...
		,, ...	3rd ,, ...	150	3	450	2	450	...	450	...
		,, ...	4th ,, ...	100	10	1,000	6	500	...	500	...
		Total ...	...	...	20	4,050	8	3,550	...	3,550	...
		II. ...	1st Grade...	75	12	900	3	750	...	750	...
		,, ...	2nd ,, ...	50	19	950	5	900	...	900	...
		,, ...	3rd ,, ...	25	46	1,150	14	1,075	...	1,075	...
		,, ...	4th ,, ...	10	204	2,040	22	2,000	...	2,000	...
		Total ...	...	...	281	5,040	44	4,725	...	4,725	...
	GRAND TOTAL ...		...	...	301	9,090	52	8,275	...	8,275	...
	TOTAL FOR DIVISION		...	...	7,714	1,48,460	1,149	1,41,310	40	1,41,125	...
JULLUNDUR.	LUDHIANA.	I. ...	1st Grade...	500	...	...	...	...	...	...	...
		,, ...	2nd ,, ...	200	1	200	...	200	...	200	...
		,, ...	3rd ,, ...	150	3	450	...	450	...	450	...
		,, ...	4th ,, ...	100	13	1,300	3	1,100	...	1,100	...
		Total ...	...	...	17	1,950	3	1,750	...	1,750	...
		II. ...	1st Grade...	75	14	1,050	3	1,125	...	1,125	...
		,, ...	2nd ,, ...	50	48	2,400	9	2,300	...	2,300	...
		,, ...	3rd ,, ...	25	203	5,075	42	4,750	...	4,750	...
		,, ...	4th ,, ...	10	813	8,130	119	7,860	...	7,860	...
		Total ...	...	...	1,078	16,655	173	16,035	...	16,035	...
	GRAND TOTAL ...		...	...	1,095	18,605	176	17,785	...	17,785	...
	FEROZEPORE.	I. ...	1st Grade...	500	...	...	...	...	...	...	...
		,, ...	2nd ,, ...	200	4	800	...	800	...	800	...
		,, ...	3rd ,, ...	150	1	150	...	150	...	150	...
		,, ...	4th ,, ...	100	13	1,300	2	1,200	...	1,200	...
		Total ...	...	...	18	2,250	2	2,150	...	2,150	...
		II. ...	1st Grade...	75	11	825	2	825	...	825	...
		,, ...	2nd ,, ...	50	26	1,300	2	1,300	...	1,300	...
		,, ...	3rd ,, ...	25	132	3,300	12	3,125	...	3,125	...
		,, ...	4th ,, ...	10	612	6,120	63	6,000	2	6,000	10
		Total ...	...	...	781	11,545	79	11,250	2	11,250	10
	GRAND TOTAL ...		...	...	799	13,795	81	13,400	2	13,400	10

AND GRADE UNDER THE LICENSE TAX ACT OF 1878, DURING THE YEAR 1884-85—*continued.*

FINAL DEMAND.		PENALTIES BY COLLECTORS.		FINES BY MAGISTRATES.		COLLECTIONS.					REMARKS.
Number of licenses.	Amount charged.	Number of penalties.	Amount of penalties.	Number.	Amount of fines.	Fees.	Penalties.	Fines.	Total.	Balance.	
4	2,000	...	...	...	...	2,000	...	...	2,000	...	Population 42,945
3	600	...	...	...	...	600	...	...	600	...	No. of villages 263
3	450	...	...	...	...	450	...	...	450	...	No. of villages in which there are licenses. 6
5	500	...	...	...	...	500	...	...	500	...	
15	3,550	...	...	...	...	3,550	...	...	3,550	...	No. of tax-payers per 1,000 of population. 6·66
10	750	...	...	...	...	675	...	...	675	75	Incidence of taxation per 1,000 of population. 188/5/0
18	900	...	...	...	...	900	...	...	900	...	
43	1,075	...	...	...	...	1,050	...	...	1,050	25	
200	2,000	3	8	...	...	1,905	8	...	1,913	95	
271	4,725	3	8	...	...	4,530	8	...	4,538	195	
286	8,275	3	8	...	...	8,080	8	...	8,088	195	
7,403	1,41,125	41	458	1	5	1,40,820	458	5	1,41,283	305	
...	...	...	...	...	...	...	...	...	...	...	
1	200	...	...	...	...	200	...	...	200	...	Population 6,18,835
3	450	...	...	...	...	450	...	...	450	...	No. of villages 906
11	1,100	...	...	...	...	1,100	...	...	1,100	...	No. of villages in which there are licenses. 191
15	1,750	...	...	...	...	1,750	...	...	1,750	...	
15	1,125	...	...	...	...	1,125	...	...	1,125	...	No. of tax-payers per 1,000 of population. 1·69
46	2,300	...	...	...	...	2,300	...	...	2,300	...	Incidence of taxation per 1,000 of population. 28/11/10
190	4,750	...	...	...	...	4,750	...	...	4,750	...	
786	7,860	...	...	...	...	7,860	...	...	7,860	...	
1,037	16,035	...	...	...	...	16,035	...	...	16,035	...	
1,052	17,785	...	...	...	...	17,785	...	...	17,785	...	
...	...	...	...	...	...	...	...	...	...	...	Population 7,47,190
4	800	...	...	...	...	800	...	...	800	...	No. of villages 1,636
1	150	...	...	...	...	150	...	...	150	...	No. of villages in which there are licenses. 210
12	1,200	...	...	...	...	1,200	...	...	1,200	...	
17	2,150	...	...	...	...	2,150	...	...	2,150	...	No. of tax-payers per 1,000 of population. 1·04
11	825	...	...	...	...	825	...	...	825	...	Incidence of taxation per 1,000 of population. 17/14/9
26	1,300	...	...	...	...	1,300	...	...	1,300	...	
125	3,125	...	...	...	...	3,125	...	...	3,125	...	
599	5,990	...	...	...	...	5,990	...	...	5,990	...	
761	11,240	...	...	...	...	11,240	...	...	11,240	...	
778	13,390	...	...	...	...	13,390	...	...	13,390	...	

STATEMENT SHOWING DEMAND AND COLLECTIONS IN DETAIL OF EACH CLASS

Division.	District.	Class.	Grade.	Fees for each grade.	Collectors' Lists.		Petitions of Objections.		Appeals.		Remissions.
					Number charged.	Amount charged.	Number of objections.	Amount charged.	Number of appeals.	Amount charged.	Amount of remissions to persons carrying on business for portion of year only.
JULLUNDUR—*concluded.*	JULLUNDUR.	I. ...	1st Grade...	500	...	...	...	...	...	...	...
		,, ...	2nd ,, ...	200	1	200	...	200	...	200	...
		,, ...	3rd ,, ...	150	6	900	2	900	...	900	...
		,, ...	4th ,, ...	100	11	1,100	3	900	1	900	...
		Total ...	...	...	18	2,200	5	2,000	1	2,000	...
		II. ...	1st Grade...	75	14	1,050	5	1,050	...	1,050	...
		,, ...	2nd ,, ...	50	52	2,600	6	2,600	...	2,600	...
		,, ...	3rd ,, ...	25	225	5,625	29	5,375	3	5,325	...
		,, ...	4th ,, ...	10	913	9,130	132	8,610	16	8,550	...
		Total ...	...	...	1,204	18,405	172	17,635	19	17,525	...
	Grand Total ...		...	...	1,222	20,605	177	19,635	20	19,525	...
	HOSHIARPUR.	I. ...	1st Grade...	500	...	...	...	...	...	...	...
		,, ...	2nd ,, ...	200	3	600	2	400	...	400	...
		,, ...	3rd ,, ...	150	3	450	2	450	...	450	...
		,, ...	4th ,, ...	100	8	800	2	800	...	800	...
		Total ...	...	...	14	1,850	6	1,650	...	1,650	...
		II. ...	1st Grade...	75	3	225	...	300	...	300	...
		,, ...	2nd ,, ...	50	33	1,650	13	1,300	...	1,300	...
		,, ...	3rd ,, ...	25	183	4,575	54	3,950	...	3,950	...
		,, ...	4th ,, ...	10	853	8,530	184	8,340	5	8,290	...
		Total ...	...	...	1,072	14,980	251	13,890	5	13,840	...
	Grand Total ...		...	...	1,086	16,830	257	15,540	5	15,490	...
	KANGRA.	I. ...	1st Grade...	500	...	...	...	...	...	...	...
		,, ...	2nd ,, ...	200	...	...	...	...	...	...	...
		,, ...	3rd ,, ...	150	1	150	...	150	...	150	...
		,, ...	4th ,, ...	100	1	100	...	100	...	100	...
		Total ...	...	...	2	250	...	250	...	250	...
		II. ...	1st Grade...	75	5	375	1	300	...	300	...
		,, ...	2nd ,, ...	50	13	650	7	550	...	550	...
		,, ...	3rd ,, ...	25	55	1,375	9	1,325	...	1,325	...
		,, ...	4th ,, ...	10	541	5,410	202	4,770	22	4,590	...
		Total ...	...	...	614	7,810	219	6,945	22	6,765	...
	Grand Total ...		...	...	616	8,060	219	7,195	22	7,015	...
	Total for Division		...	...	4,818	77,895	910	73,555	49	73,215	10

AND GRADE UNDER THE LICENSE TAX ACT OF 1878, DURING THE YEAR 1884-85—*continued.*

FINAL DEMAND.		PENALTIES BY COLLECTORS.		FINES BY MAGISTRATES.		COLLECTIONS.					REMARKS.
Number of licenses.	Amount charged.	Number of penalties.	Amount of penalties.	Number.	Amount of fines.	Fees.	Penalties.	Fines.	Total.	Balance.	
...	...	...	...	...	...	...	...	...	...	...	Population 7,89,555
1	200	...	...	...	...	200	...	...	200	...	No. of villages 1,208
6	900	...	...	...	...	900	...	...	900	...	No. of villages in which there are licenses. 193
9	900	...	...	...	...	900	...	...	900	...	
16	2,000	...	...	...	...	2,000	...	...	2,000	...	No. of tax-payers per 1,000 of population. 1·46
14	1,050	...	...	...	...	1,050	...	...	1,050	...	Incidence of taxation per 1,000 of population. 24/11/8
52	2,600	...	...	...	...	2,600	...	...	2,600	...	
213	5,325	...	...	...	...	5,325	...	...	5,325	...	
855	8,550	...	...	...	...	8,550	...	...	8,550	...	
1,134	17,525	...	...	...	...	17,525	...	...	17,525	...	
1,150	19,525	...	...	...	...	19,525	...	...	19,525	...	
...	...	...	...	...	...	...	...	...	...	...	Population 9,01,381
2	400	...	...	...	...	400	...	...	400	...	No. of villages 2,183
3	450	...	...	...	...	450	...	...	450	...	No. of villages in which there are licenses. 371
8	800	...	...	...	...	800	...	...	800	...	
13	1,650	...	...	...	...	1,650	...	...	1,650	...	No. of tax-payers per 1,000 of population. 1·14
4	300	...	...	...	...	300	...	...	300	...	Incidence of taxation per 1,000 of population. 17 3/0
26	1,300	...	...	...	...	1,300	...	...	1,300	...	
158	3,950	...	...	...	...	3,950	...	...	3,950	...	
829	8,290	4	120	...	...	8,290	30	...	8,320	...	
1,017	13,840	4	120	...	...	13,840	30	...	13,870	...	
1,030	15,490	4	120	...	...	15,490	30	...	15,520	...	
...	...	...	...	...	...	...	...	...	...	...	Population 7,30,845
...	...	...	...	...	...	...	...	...	...	...	No. of villages 681
1	150	...	...	...	...	150	...	...	150	...	No. of villages in which there are licenses. 192
1	100	...	...	...	...	100	...	...	100	...	
2	250	...	...	...	...	250	...	...	250	...	No. of tax-payers per 1,000 of population. 0·72
4	300	...	...	...	...	300	...	...	300	...	Incidence of taxation per 1,000 of population. 9 9 6
11	550	...	...	...	...	550	...	...	550	...	
53	1,325	...	...	...	...	1,325	...	...	1,325	...	
459	4,590	6	30	...	...	4,590	30	...	4,620	...	
527	6,765	6	30	...	...	6,765	30	...	6,795	...	
529	7,015	6	30	...	...	7,015	30	...	7,045	...	
4,539	73,205	10	150	...	...	73,205	60	...	73,265	...	

STATEMENT SHOWING DEMAND AND COLLECTIONS IN DETAIL OF EACH CLASS

Division.	District.	Class.	Grade.	Fees for each grade.	Collectors' Lists.		Petitions of Objections.		Appeals.		Remissions.
					Number charged.	Amount charged.	Number of objections.	Amount charged.	Number of appeals.	Amount charged.	Amount of remissions to persons carrying on business for portion of year only.
LAHORE.	GURDASPUR.	I. ...	1st Grade...	500	...	...	...	...	...	...	...
		,, ...	2nd ,, ...	200	3	600	2	600	1	800	...
		,, ...	3rd ,, ...	150	8	1,200	5	1,050	2	900	...
		,, ...	4th ,, ...	100	9	900	4	700	...	700	...
		Total ...	...	...	20	2,700	11	2,350	3	2,400	...
		II. ...	1st Grade...	75	12	900	1	1,050	...	1,050	...
		,, ...	2nd ,, ...	50	68	3,400	31	2,400	...	2,400	...
		,, ...	3rd ,, ...	25	210	5,250	93	4,425	...	4,425	...
		,, ...	4th ,, ...	10	758	7,580	305	5,980	4	5,980	...
		Total ...	...	...	1,048	17,130	430	13,855	4	13,855	...
	Grand Total ...		...	...	1,068	19,830	441	16,205	7	16,255	...
	AMRITSAR.	I. ...	1st Grade...	500	3	1,500	1	1,000	...	1,000	...
		,, ...	2nd ,, ...	200	7	1,400	...	1,400	...	1,400	...
		,, ...	3rd ,, ...	150	7	1,050	2	750	...	750	...
		,, ...	4th ,, ...	100	18	1,800	6	1,600	...	1,600	...
		Total ...	...	...	35	5,750	9	4,750	...	4,750	...
		II. ...	1st Grade...	75	18	1,350	3	1,425	...	1,425	...
		,, ...	2nd ,, ...	50	84	4,200	19	4,000	...	4,000	...
		,, ...	3rd ,, ...	25	311	7,775	36	7,600	...	7,600	...
		,, ...	4th ,, ...	10	1,255	12,550	154	12,070	1	12,060	...
		Total ...	...	...	1,668	25,875	212	25,095	1	25,085	...
	Grand Total ...		...	...	1,703	31,625	221	29,845	1	29,835	...
	LAHORE.	I. ...	1st Grade...	500	2	1,000	...	1,000	...	1,000	...
		,, ...	2nd ,, ...	200	7	1,400	2	1,200	...	1,200	...
		,, ...	3rd ,, ...	150	5	750	...	900	...	900	...
		,, ...	4th ,, ...	100	11	1,100	4	900	...	900	...
		Total ...	...	...	25	4,250	6	4,000	...	4,000	...
		II. ...	1st Grade...	75	20	1,500	8	1,200	...	1,200	59
		,, ...	2nd ,, ...	50	67	3,350	28	2,700	2	2,650	...
		,, ...	3rd ,, ...	25	254	6,350	83	6,025	19	5,775	...
		,, ...	4th ,, ...	10	1,257	12,570	436	11,480	58	11,150	...
		Total ...	...	...	1,598	23,770	555	21,405	79	20,775	59
	Grand Total ...		...	...	1,623	28,020	561	25,405	79	24,775	59

AND GRADE UNDER THE LICENSE TAX ACT OF 1878, DURING THE YEAR 1884-85—*continued.*

FINAL DEMAND.		PENALTIES BY COLLECTORS.		FINES BY MAGISTRATES.		COLLECTIONS.					REMARKS.
Number of licenses.	Amount charged.	Number of penalties.	Amount of penalties.	Number.	Amount of fines.	Fees.	Penalties.	Fines.	Total.	Balance.	
...	...	...	...	...	...	...	...	...	...	...	Population 8,23,695
4	800	...	...	...	...	800	...	...	800	...	No. of villages 2,291
6	900	...	...	...	...	900	...	...	900	...	No. of villages in which there are licenses. 250
7	700	...	...	...	...	700	...	...	700	...	
17	2,400	...	...	...	...	2,400	...	...	2,400	...	No. of tax-payers per 1,000 of population. 1·03
14	1,050	...	...	...	...	1,050	...	...	1,050	...	Incidence of taxation per 1,000 of population. 19/11/9
48	2,400	...	...	...	...	2,400	...	...	2,400	...	
177	4,425	...	...	...	...	4,425	...	...	4,425	...	
598	5,980	...	...	...	...	5,970	...	...	5,970	10	
837	13,855	...	...	...	...	13,845	...	...	13,845	10	
854	16,255	...	...	...	...	16,245	...	..	16,245	10	
2	1,000	...	...	...	...	1,000	...	...	1,000	...	Population 8,93,266
7	1,400	...	...	...	...	1,400	...	...	1,400	...	No. of villages 1,076
5	750	...	...	...	...	750	...	...	750	...	No. of villages in which there are licenses. 220
16	1,600	...	...	...	...	1,600	...	...	1,600	...	
30	4,750	...	...	...	...	4,750	...	...	4,750	...	No. of tax-payers per 1,000 of population. 1·83
19	1,425	...	...	...	...	1,425	...	...	1,425	...	Incidence of taxation per 1,000 of population. 33/6 4
83	4,000	...	...	...	...	4,000	...	...	4,000	...	
304	7,600	...	...	...	...	7,550	...	...	7,550	50	
1,206	12,060	5	50	...	...	12,020	50	...	12,070	40	
1,609	25,805	5	50	...	...	24,995	50	...	25,045	90	
1,639	29,835	5	50	...	...	29,745	50	...	29,795	90	
2	1,000	...	...	...	...	1,000	...	...	1,000	...	Population 9,24,106
6	1,200	...	...	...	...	1,200	...	...	1,200	...	No. of villages 1,547
6	900	...	...	...	...	900	...	...	900	...	No. of villages in which there are licenses. 332
9	900	...	...	...	...	900	...	...	900	...	
23	4,000	...	...	...	...	4,000	...	...	4,000	...	No. of tax-payers per 1,000 of population. 1·05
16	1,141	...	...	...	...	1,141	...	...	1,141	...	
53	2,650	...	...	...	...	2,650	...	...	2,650	...	Incidence of taxation per 1,000 of population. 26,11,11
231	5,775	...	...	...	...	5,750	...	...	5,750	25	
1,115	11,150	...	...	...	...	11,140	...	...	11,140	10	
1,415	20,716	...	...	...	...	20,681	...	...	20,681	35	
1,438	24,716	...	...	...	...	24,681	...	...	24,681	35	

STATEMENT showing DEMAND and COLLECTIONS in Detail of each CLASS

Division.	District.	Class.	Grade.	Fees for each grade.	Collectors' Lists.		Petitions of Objections.		Appeals.		Remissions.
					Number charged.	Amount charged.	Number of objections.	Amount charged.	Number of appeals.	Amount charged.	Amount of remissions to persons carrying on business for portion of year only.
LAHORE—*concluded.*	JHANG.	I. ...	1st Grade ..	500	...	...	...	...	...	...	...
		,, ...	2nd ,, ...	200	...	...	...	...	...	...	...
		,, ...	3rd ,, ...	150	...	...	...	...	...	...	...
		,, ...	4th ,, ...	100	6	600	...	600	...	600	...
		Total ...	...	...	6	600	...	600	...	600	...
		II. ...	1st Grade...	75	9	675	4	675	...	675	...
		,, ...	2nd ,, ...	50	35	1,750	18	1,250	...	1,250	...
		,, ...	3rd ,, ...	25	190	4,750	57	4,250	1	4,225	...
		,, ...	4th ,, ...	10	804	8,040	205	7,100	1	7,100	...
		Total ...	...	...	1,038	15,215	284	13,275	2	13,250	...
	Grand Total ...		...	...	1,044	15,815	284	13,875	2	13,850	...
	MONTGOMERY.	I. ...	1st Grade...	500	...	...	...	...	...	...	...
		,, ...	2nd ,, ...	200	1	200	1	200	...	200	...
		,, ...	3rd ,, ...	150	...	...	...	...	...	...	...
		,, ...	4th ,, ...	100	2	200	...	200	...	200	...
		Total ...	...	...	3	400	1	400	...	400	...
		II. ...	1st Grade...	75	5	375	1	375	...	375	...
		,, ...	2nd ,, ...	50	17	850	6	850	...	850	...
		,, ...	3rd ,, ...	25	101	2,525	13	2,375	2	2,350	...
		,, ...	4th ,, ...	10	542	5,420	87	5,240	3	5,250	...
		Total ...	...	...	665	9,170	107	8,840	5	8,825	...
	Grand Total ...		...	...	668	9,570	108	9,240	5	9,225	...
	MOOLTAN.	I. ...	1st Grade...	500	...	...	...	...	...	...	...
		,, ...	2nd ,, ...	200	4	800	...	800	...	800	...
		,, ...	3rd ,, ...	150	1	150	...	150	...	150	...
		,, ...	4th ,, ...	100	10	1,000	2	1,000	1	1,000	...
		Total ...	...	...	15	1,950	2	1,950	1	1,950	...
		II. ...	1st Grade...	75	14	1,050	4	975	...	975	...
		,, ...	2nd ,, ...	50	56	2,800	18	2,550	3	2,550	...
		,, ...	3rd ,, ...	25	226	5,650	45	5,425	1	5,425	...
		,, ...	4th ,, ...	10	987	9,870	216	9,300	4	9,280	...
		Total ...	...	...	1,283	19,370	283	18,250	8	18,230	...
	Grand Total ...		...	...	1,298	21,320	285	20,200	9	20,180	...
	Total for Division		...	...	7,404	1,26,180	1,900	1,14,770	103	1,14,120	59

AND GRADE UNDER THE LICENSE TAX ACT OF 1878, DURING THE YEAR 1884-85—*continued.*

FINAL DEMAND.		PENALTIES BY COLLECTORS.		FINES BY MAGISTRATES.		COLLECTIONS.					REMARKS.	
Number of licenses.	Amount charged.	Number of penalties.	Amount of penalties.	Number.	Amount of fines.	Fees.	Penalties.	Fines.	Total.	Balance.		
...	...	...	...	...	...	...	...	...	...	...	Population	3,95,296
...	...	...	...	...	...	...	...	...	...	...	No. of villages	761
...	...	...	...	...	...	...	...	...	...	...	No. of villages in which there are licenses.	252
6	600	...	...	...	...	600	...	...	600	...		
6	600	...	...	...	...	600	...	...	600	...	No. of tax-payers per 1,000 of population.	2·32
9	675	...	...	...	...	675	...	...	675	...	Incidence of taxation per 1,000 of population.	35/0/9
25	1,250	...	...	...	...	1,250	...	...	1,250	...		
169	4,225	3	75	...	...	4,225	75	...	4,300	...		
710	7,100	20	192	...	...	7,100	192	...	7,292	...		
913	13,250	23	267	...	...	13,250	267	...	13,517	...		
919	13,850	23	267	...	...	13,850	267	...	14,117	...		
...	...	...	...	...	...	...	...	...	...	...	Population	4,26,529
1	200	...	...	...	...	200	...	...	200	...	No. of villages	2,386
...	...	...	...	...	...	...	...	...	...	...	No. of villages in which there are licenses.	231
2	200	...	...	...	...	200	..	...	200	...		
3	400	...	...	...	...	400	...	...	400	...	No. of tax-payers per 1,000 of population.	1·51
5	375	...	...	...	...	375	...	...	375	...	Incidence of taxation per 1,000 of population.	21/10/0
17	850	...	...	...	...	850	...	...	850	...		
94	2,350	...	...	...	...	2,333	...	...	2,333	17		
525	5,250	...	...	...	...	5,240	...	...	5,240	10		
641	8,825	...	...	...	...	8,798	...	...	8,798	27		
644	9,225	...	...	...	...	9,198	...	...	9,198	27		
...	...	...	...	...	...	...	...	...	...	...	Population	5,51,964
4	800	...	...	...	...	800	...	...	800	...	No. of villages	1,293
1	150	...	...	...	...	150	...	...	150	...	No. of villages in which there are licenses.	2 92
10	1,000	...	...	...	...	1,000	...	...	1,000	...		
15	1,950	...	...	...	...	1,950	...	...	1,950	...	No. of tax-payers per 1,000 of population.	2·21
13	975	...	...	...	...	975	...	...	975	...	Incidence of taxation per 1,000 of population.	36/8 11
51	2,550	...	...	...	...	2,550	...	...	2,550	...		
217	5,425	...	...	...	...	5,425	...	...	5,425	...		
928	9,280	...	...	...	...	9,280	...	...	9,280	...		
1,209	18,230	...	...	...	...	18,230	...	...	18,230	...		
1,224	20,180	...	...	...	...	20,180	...	...	20,180	...		
6,718	1,14,061	28	317	...	...	1,13,899	317	...	1,14,216	162		

STATEMENT SHOWING DEMAND AND COLLECTIONS IN DETAIL OF EACH CLASS

Division.	District.	Class.	Grade.	Fees for each gade.	Collectors' Lists.		Petitions of Objections.		Appeals.		Remissions.
					Number charged.	Amount charged.	Number of objections.	Amount charged.	Number of appeals.	Amount charged.	Amount of remissions to persons carrying on business for portion of year only.
RAWALPINDI.	RAWALPINDI.	I. ...	1st Grade...	500	2	1,000	1	1,000	...	1,000	...
		,, ...	2nd ,, ...	200	2	400	...	400	...	400	...
		,, ...	3rd ,, ...	150	3	450	2	300	...	300	...
		,, ...	4th ,, ...	100	10	1,000	6	900	...	900	...
		Total ...	...	...	17	2,850	9	2,600	...	2,600	...
		II. ...	1st Grade...	75	18	1,350	14	1,125	...	1,125	...
		,, ...	2nd ,, ...	50	50	2,500	19	2,500	3	2,500	...
		,, ...	3rd ,, ...	25	189	4,725	101	4,025	6	4,000	...
		,, ...	4th ,, ...	10	1,020	10,200	374	9,080	36	8,980	...
		Total ...	...	...	1,277	18,775	508	16,730	45	16,605	...
	Grand Total ...		...	...	1,294	21,625	517	19,330	45	19,205	...
	JHELUM.	I. ...	1st Grade...	500	...	...	...	...	...	...	...
		,, ...	2nd ,, ...	200	1	200	...	200	...	200	...
		,, ...	3rd ,, ...	150	...	...	...	...	...	...	...
		,, ...	4th ,, ...	100	3	300	...	300	...	300	...
		Total ...	...	...	4	500	...	500	...	500	...
		II. ...	1st Grade...	75	5	375	2	225	...	225	...
		,, ...	2nd ,, ...	50	24	1,200	9	1,150	...	1,150	...
		,, ...	3rd ,, ...	25	108	2,700	31	2,425	3	2,400	...
		,, ...	4th ,, ...	10	643	6,430	197	6,000	8	5,970	...
		Total ...	...	...	780	10,705	239	9,800	11	9,745	...
	Grand Total ...		...	...	784	11,205	239	10,300	11	10,245	...
	GUJRAT.	I. ...	1st Grade...	500	...	...	...	...	...	...	...
		,, ...	2nd ,, ...	200	...	...	...	...	...	...	...
		,, ...	3rd ,, ...	150	...	...	...	...	...	...	...
		,, ...	4th ,, ...	100	1	100	1	...	...	...	...
		Total ...	...	...	1	100	1	...	...	...	...
		II. ...	1st Grade...	75	1	75	1	150	...	150	...
		,, ...	2nd ,, ...	50	13	650	12	450	2	450	...
		,, ...	3rd ,, ...	25	141	3,525	57	3,200	6	3,050	...
		,, ...	4th ,, ...	10	636	6,360	157	5,940	7	5,930	...
		Total ...	...	...	791	10,610	227	9,740	15	9,580	...
	Grand Total ...		...	...	792	10,710	228	9,740	15	9,580	...

AND GRADE UNDER THE LICENSE TAX ACT OF 1878, DURING THE YEAR 1884-85—*continued*.

Final Demand.		Penalties by Collectors.		Fines by Magistrates.		Collections.					Remarks.
Number of licenses.	Amount charged.	Number of penalties.	Amount of penalties.	Number.	Amount of fines.	Fees.	Penalties.	Fines.	Total.	Balance.	
2	1,000	...	...	...	...	1,000	...	...	1,000	...	Population 8,20,512
2	400	...	...	...	...	400	...	...	400	...	No. of villages 1,647
2	300	...	...	...	...	300	...	...	300	...	No. of villages in which there are licenses. 164
9	900	...	...	...	...	900	...	...	900	...	
15	2,600	...	...	...	...	2,600	...	...	2,600	...	No. of tax-payers per 1,000 of population. 1·38
15	1,125	...	...	...	...	1,125	...	...	1,125	...	Incidence of taxation per 1,000 of population. 23 6/1
50	2,500	...	...	...	...	2,500	...	...	2,500	...	
160	4,000	...	...	...	...	4,000	...	...	4,000	...	
898	8,980	1	30	...	...	8,960	30	...	8,990	20	
1,123	16,605	1	30	...	...	16,585	30	...	16,615	20	
1,138	19,205	1	30	...	...	19,185	30	...	19,215	20	
...	...	...	...	...	...	...	...	...	...	...	Population 5,89,373
1	200	...	...	...	...	200	...	...	200	...	No. of villages 993
...	...	...	...	...	...	...	...	...	...	...	No. of villages in which there are licenses. 161
3	300	...	...	...	...	300	...	...	300	...	
4	500	...	...	...	...	500	...	...	500	...	No. of tax-payers per 1,000 of population. 1·22
3	225	...	...	...	...	225	...	...	225	...	Incidence of taxation per 1,000 of population. 17/6/1
23	1,150	...	...	...	...	1,150	...	...	1,150	...	
96	2,400	...	...	...	...	2,400	...	...	2,400	...	
597	5,970	...	...	...	...	5,970	...	...	5,970	...	
719	9,745	...	...	...	...	9,745	...	...	9,745	...	
723	10,245	...	...	...	...	10,245	...	...	10,245	...	
...	...	...	...	...	...	...	...	...	...	...	Population 6,89,115
...	...	...	...	...	...	...	...	...	...	...	No. of villages 1,428
...	...	...	...	...	...	...	...	...	...	...	No. of villages in which there are licenses. 240
...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	No. of tax-payers per 1,000 of population. 1·05
2	150	...	...	...	...	150	...	...	150	...	Incidence of taxation per 1,000 of population. 13/14/5
9	450	...	...	...	...	450	...	...	450	...	
122	3,050	...	...	...	...	3,050	...	...	3,050	...	
593	5,930	...	...	...	...	5,920	...	...	5,920	10	
726	9,580	...	...	...	...	9,570	...	...	9,570	10	
726	9,580	...	...	...	...	9,570	...	...	9,570	10	

STATEMENT SHOWING DEMAND AND COLLECTIONS IN DETAIL OF EACH CLASS

Division.	District.	Class.	Grade.	Fees for each grade.	Collectors' Lists.		Petitions of Objections.		Appeals.		Remissions.
					Number charged.	Amount charged.	Number of objections.	Amount charged.	Number of appeals.	Amount charged.	Amount of remissions to persons carrying on business for portion of year only.
RAWALPINDI—*concluded.*	SHAHPUR.	I. ...	1st Grade...	500	...	...	...	...	...	...	...
		,, ...	2nd ,, ...	200	...	...	...	...	...	...	...
		,, ...	3rd ,, ...	150	...	...	...	...	...	...	...
		,, ...	4th ,, ...	100	2	200	...	200	...	200	...
		Total ...	...	...	2	200	...	200	...	200	...
		II. ...	1st Grade...	75	5	375	1	300	...	300	...
		,, ...	2nd ,, ...	50	11	550	7	450	...	450	...
		,, ...	3rd ,, ...	25	79	1,975	23	1,875	...	1,875	...
		,, ...	4th ,, ...	10	503	5,030	152	4,670	8	4,640	...
		Total ...	...	...	598	7,930	183	7,295	8	7,265	...
	Grand Total ...		...	...	600	8,130	183	7,495	8	7,465	...
	GUJRANWALA.	I. ...	1st Grade...	500	...	...	...	...	...	...	...
		,, ...	2nd ,, ...	200	...	...	...	...	...	...	...
		,, ...	3rd ,, ...	150	...	...	...	...	...	...	...
		,, ...	4th ,, ...	100	1	100	...	100	...	100	...
		Total ...	...	...	1	100	...	100	...	100	...
		II. ...	1st Grade...	75	2	150	1	75	...	75	...
		,, ...	2nd ,, ...	50	23	1,150	5	1,050	...	1,050	...
		,, ...	3rd ,, ...	25	136	3,400	20	3,225	...	3,225	...
		,, ...	4th ,, ...	10	503	5,030	71	4,810	1	4,800	...
		Total ...	...	...	664	9,730	97	9,160	1	9,150	...
	Grand Total ...		...	...	665	9,830	97	9,260	1	9,250	...
	SIALKOT.	I. ...	1st Grade...	500	...	...	...	...	...	...	...
		,, ...	2nd ,, ...	200	1	200	1	200	1	200	...
		,, ...	3rd ,, ...	150	4	600	3	150	...	150	...
		,, ...	4th ,, ...	100	13	1,300	6	1,200	...	1,200	...
		Total ...	...	...	18	2,100	10	1,550	1	1,550	...
		II. ...	1st Grade...	75	19	1,425	15	1,050	5	975	...
		,, ...	2nd ,, ...	50	77	3,850	47	2,650	5	2,500	...
		,, ...	3rd ,, ...	25	381	9,525	195	8,450	28	8,175	...
		,, ...	4th ,, ...	10	1,425	14,250	736	12,290	76	11,840	...
		Total ...	...	...	1,902	29,050	993	24,440	114	23,490	...
	Grand Total ...		...	...	1,920	31,150	1,003	25,990	115	25,040	...
	Total for Division		...	...	6,055	92,650	2,267	82,115	195	80,785	...

AND GRADE UNDER THE LICENSE TAX ACT OF 1878, DURING THE YEAR 1884-85—*continued.*

Final Demand.		Penalties by Collectors.		Fines by Magistrates.		Collections.					Remarks.
Number of licenses.	Amount charged.	Number of penalties.	Amount of penalties.	Number.	Amount of fines.	Fees.	Penalties.	Fines.	Total.	Balance.	
...	...	...	...	...	...	...	...	...	...	...	
...	...	...	...	...	...	...	...	...	...	...	Population 4,21,508
...	...	...	...	...	...	...	...	...	...	...	No. of villages 656
2	200	...	...	...	...	200	...	...	200	...	No. of villages in which there are licenses. 133
2	200	...	...	...	...	200	...	...	200	...	No. of tax-payers per 1,000 of population. 1·31
4	300	...	...	...	...	300	...	...	300	...	
9	450	...	...	...	...	450	...	...	450	...	Incidence of taxation per 1,000 of population. 17,11/5
75	1,875	...	...	...	...	1,825	...	...	1,825	50	
464	4,640	...	...	...	...	4,580	...	...	4,580	60	
552	7,265	...	...	...	...	7,155	...	...	7,155	110	
554	7,465	...	...	...	...	7,355	...	...	7,355	110	
...	...	...	...	...	...	...	...	...	...	...	Population 6,16,89
...	...	...	...	...	...	...	...	...	...	...	No. of villages 1,19
...	...	...	...	...	...	...	...	...	...	...	No. of villages in which there are licenses. 17
1	100	...	...	...	...	100	...	...	100	...	
1	100	...	...	...	...	100	...	...	100	...	No. of tax-payers per 1,000 of population. 1·02
1	75	...	...	...	...	75	...	...	75	...	Incidence of taxation per 1,000 of population. 14,15,10
21	1,050	...	...	...	...	1,050	...	...	1,050	...	
129	3,225	...	...	...	...	3,225	...	...	3,225	...	
480	4,800	...	...	...	...	4,790	...	...	4,790	10	
631	9,150	...	...	...	...	9,140	...	...	9,140	10	
632	9,250	...	...	...	...	9,240	...	...	9,240	10	
...	...	...	...	...	...	...	...	...	...	...	Population 10,12,148
1	200	...	...	...	...	200	...	...	200	...	No. of villages 2,312
1	150	...	...	...	...	150	...	...	150	...	No. of villages in which there are licenses. 421
12	1,200	...	...	...	...	1,200	...	...	1,200	...	
14	1,550	...	...	...	...	1,[illegible]			[illegible]	...	No. of tax-payers per 1,000 of population. 1·56
13	975	...	...	...	...	975	...	...	...	...	Incidence of taxation per 1,000 of population. 24/11/10
50	2,500	...	...	...	...	2,500	...	...	2,[illegible]	...	
327	8,175	...	...	...	...	8,145	...	...	8,145	30	
1,184	11,840	...	...	...	...	11,830	...	...	11,830	10	
1,574	23,490	...	...	...	...	23,450	...	...	23,450	40	
1,588	25,040	...	...	...	...	25,000	...	...	25,000	40	
5,361	80,785	1	30	...	...	80,595	30	...	80,625	190	

STATEMENT SHOWING DEMAND AND COLLECTIONS IN DETAIL OF EACH CLASS

Division.	District.	Class.	Grade.	Fees for each grade.	Collectors' Lists.		Petitions of Objections.		Appeals.		Remissions.
					Number charged.	Amount charged.	Number of objections.	Amount charged.	Number of appeals.	Amount charged.	Amount of remissions to persons carrying on business for portion of year only.
D E R A J A T.	M U Z A F F A R G A R H.	I. ...	1st Grade...	500	...	...	...	...	...	...	...
		,, ...	2nd ,, ...	200	...	...	...	...	...	...	...
		,, ...	3rd ,, ...	150	...	...	...	...	...	...	...
		,, ...	4th ,, ...	100	1	100	1	100	...	100	...
		Total ...	...	...	1	100	1	100	...	100	...
		II. ...	1st Grade...	75	6	450	3	225	...	225	...
		,, ...	2nd ,, ...	50	23	1,150	4	1,150	...	1,150	...
		,, ...	3rd ,, ...	25	158	3,950	70	3,200	...	3,200	...
		,, ...	4th ,, ...	10	700	7,000	143	6,410	...	6,410	...
		Total ...	...	...	887	12,550	220	10,985	...	10,985	...
	Grand Total ...		...	...	888	12,650	221	11,085	...	11,085	...
	D E R A G H A Z I K H A N.	I. ...	1st Grade...	500	...	...	...	...	...	...	...
		,, ...	2nd ,, ...	200	1	200	...	200	...	200	...
		,, ...	3rd ,, ...	150	...	...	...	...	...	...	...
		,, ...	4th ,, ...	100	1	100	...	100	...	100	...
		Total ...	...	...	2	300	...	300	...	300	...
		II. ...	1st Grade...	75	5	375	5	...	...	...	...
		,, ...	2nd ,, ...	50	8	400	4	350	...	350	...
		,, ...	3rd ,, ...	25	86	2,150	30	1,700	...	1,700	...
		,, ...	4th ,, ...	10	691	6,910	353	6,020	...	6,020	...
		Total ...	...	...	790	9,835	392	8,070	...	8,070	...
	Grand Total ...		...	...	792	10,135	392	8,370	...	8,370	...
	D E R A I S M A I L K H A N.	II. ...	1st Grade...	500	...	...	...	...	...	...	...
		,, ...	2nd ,, ...	200	...	...	...	...	...	...	...
		,, ...	3rd ,, ...	150	...	...	...	...	...	...	...
		,, ...	4th ,, ...	100	3	300	1	300	1	200	...
		Total ...	...	...	[illegible]	300	1	300	1	200	...
		I. ...	1st Grade...	75	6	450	1	375	...	450	...
		,, ...	2nd ,, ...	50	30	1,500	10	1,250	2	1,200	...
		,, ...	3rd ,, ...	25	144	3,600	27	3,375	6	3,250	...
		,, ...	4th ,, ...	10	588	5,880	114	5,550	11	5,540	...
		Total ...	...	...	768	11,430	152	10,550	19	10,440	...
	Grand Total ...		...	...	771	11,730	153	10,850	20	10,640	...

AND GRADE UNDER THE LICENSE TAX ACT OF 1878, DURING THE YEAR 1884-85—*continued.*

FINAL DEMAND.		PENALTIES BY COLLECTORS.		FINES BY MAGISTRATES.		COLLECTIONS.					REMARKS.	
Number of licenses.	Amount charged.	Number of penalties.	Amount of penalties.	Number.	Amount of fines.	Fees.	Penalties.	Fines.	Total.	Balance.		
...	...	...	...	...	...	...	...	...	...	...	Population	3,38,605
...	...	...	...	...	...	...	...	...	...	...	No. of villages	734
...	...	...	...	...	...	...	...	...	...	...	No. of villages in which there are licenses.	101
1	100	...	...	...	...	100	...	...	100	...		
1	100	...	...	...	...	100	...	...	100	...	No. of tax-payers per 1,000 of population.	2·35
3	225	...	...	...	...	225	...	...	225	...	Incidence of taxation per 1,000 of population.	32/11/9
23	1,150	...	...	...	...	1,150	...	...	1,150	...		
128	3,200	...	...	...	...	3,200	...	...	3,200	...		
641	6,410	1	10	...	...	6,410	10	...	6,420	...		
795	10,985	1	10	...	...	10,985	10	...	10,995	...		
796	11,085	1	10	...	...	11,085	10	...	10,995	...		
...	...	...	...	...	...	...	...	...	...	...	Population	3,63,346
1	200	...	...	...	...	200	...	...	200	...	No. of villages	663
...	...	...	...	...	...	...	...	...	...	...	No. of villages in which there are licenses.	127
1	100	...	...	...	...	100	...	...	100	...		
2	300	...	...	...	...	300	...	...	300	...	No. of tax-payers per 1,000 of population.	1·86
...	...	...	...	...	...	...	...	...	...	...	Incidence of taxation per 1,000 of population.	23/0/7
7	350	...	...	...	...	350	...	...	350	...		
68	1,700	...	...	...	...	1,700	...	...	1,700	...		
602	6,020	...	...	206	681	3,960	...	...	3,960	2,060		
677	8,070	...	...	206	681	6,010	...	...	6,010	2,060		
679	8,370	...	...	206	681	6,310	...	...	6,310	2,060		
...	...	...	...	...	...	...	...	...	...	...		
...	...	...	...	...	...	...	...	...	...	...	Population	4,41,649
...	...	...	...	...	...	...	...	...	...	...	No. villages	746
2	200	...	...	...	...	200	...	...	200	...	No. of villages in which there are licenses.	159
2	200	...	...	...	...	200	...	...	200	...	No. of tax-payers per 1,000 of population.	1·62
6	450	...	...	...	...	450	...	...	450	...	Incidence of taxation per 1,000 of population.	24/1/6
24	1,200	...	...	...	...	1,200	...	...	1,200	...		
130	3,250	..	...	...	...	3,250	...	...	3,250	...		
554	5,540	...	...	...	...	5,540	...	...	5,540	...		
714	10,440	...	...	...	..	10,440	...	...	10,440	...		
716	10,640	...	...	...	...	10,640	...	...	10,640	...		

FORM

STATEMENT SHOWING DEMAND AND COLLECTIONS IN DETAIL OF EACH CLASS

Division.	District.	Class.	Grade.	Fees for each grade.	Collectors' Lists.		Petitions of Objections		Appeals.		Remissions.
					Number charged.	Amount charged.	Number of objections.	Amount charged.	Number of appeals.	Amount charged.	Amount of remissions to persons carrying on business for portion of year only.
DERAJAT—*concluded.*	BANNU.	I. ...	1st Grade...	500	...	...	...	...	...	...	...
		,, ...	2nd ,, ...	200	...	...	...	...	...	...	...
		,, ...	3rd ,, ...	150	...	...	...	...	...	...	...
		,, ...	4th ,, ...	100	...	...	...	...	...	...	...
		Total ...	...	...	...	...	...	...	...	...	...
		II. ...	1st Grade...	75	2	150	2	75	...	75	...
		,, ...	2nd ,, ...	50	15	750	1	800	...	800	...
		,, ...	3rd ,, ...	25	39	975	6	875	...	875	...
		,, ...	4th ,, ...	10	172	1,720	44	1,510	...	1,510	...
		Total ...	...	...	228	3,595	53	3,260	...	3,260	...
	Grand Total ...		...	...	228	3,595	53	3,260	...	3,260	...
	Total for Division ...		...	...	2,679	38,110	819	33,565	20	33,355	...
PESHAWAR.	PESHAWAR.	I. ...	1st Grade...	500	3	1,500	3	1,000	...	1,000	...
		,, ...	2nd ,, ...	200	3	600	2	600	...	600	...
		,, ...	3rd ,, ...	150	3	450	1	450	...	450	...
		,, ...	4th ,, ...	100	5	500	3	400	...	400	...
		Total ...	...	...	14	3,050	9	2,450	...	2,450	...
		II. ...	1st Grade...	75	6	450	3	300	...	300	...
		,, ...	2nd ,, ...	50	27	1,350	15	1,200	...	1,200	...
		,, ...	3rd ,, ...	25	125	3,125	79	2,300	2	2,250	...
		,, ...	4th ,, ...	10	1,047	10,470	628	8,460	15	8,380	...
		Total ...	...	...	1,205	15,395	725	12,260	17	12,130	...
	Grand Total ...		...	...	1,219	18,445	734	14,710	17	14,580	...
	HAZARA.	I. ...	1st Grade...	500	...	...	...	...	...	...	...
		,, ...	2nd ,, ...	200	...	...	...	...	...	...	...
		,, ...	3rd ,, ...	150	...	...	...	...	...	...	...
		,, ...	4th ,, ...	100	...	...	...	...	...	...	...
		Total ...	...	...	...	...	...	...	...	...	...
		II. ...	1st Grade...	75	...	...	...	...	...	...	...
		,, ...	2nd ,, ...	50	1	50	...	50	...	50	...
		,, ...	3rd ,, ...	25	29	725	...	725	...	725	...
		,, ...	4th ,, ...	10	188	1,880	15	1,870	...	1,870	...
		Total ...	...	...	218	2,655	15	2,645	...	2,645	...
	Grand Total ...		...	...	218	2,655	15	2,645	...	2,645	...
	KOHAT.	I. ...	1st Grade...	500	...	...	...	...	...	...	...
		,, ...	2nd ,, ...	200	...	...	...	...	...	...	...
		,, ...	3rd ,, ...	150	...	...	...	...	...	...	...
		,, ...	4th ,, ...	100	...	...	...	...	...	...	...
		Total ...	...	...	...	...	...	...	...	...	...
		II. ...	1st Grade...	75	...	...	...	...	...	...	...
		,, ...	2nd ,, ...	50	4	200	1	200	...	200	...
		,, ...	3rd ,, ...	25	15	375	7	275	...	257	...
		,, ...	4th ,, ...	10	78	780	38	730	3	700	...
		Total ...	...	...	97	1,355	46	1,205	3	1,175	...
	Grand Total ...		...	...	97	1,355	46	1,205	3	1,175	...
	Total for Division ...		...	...	1,534	22,455	795	18,560	20	18,400	...
	Total for Province ...		...	...	30,204	5,05,750	7,840	4,63,875	427	4,61,000	...

AND GRADE UNDER THE LICENSE TAX ACT OF 1878, DURING THE YEAR 1884-85—*concluded.*

FINAL DEMAND.		PENALTIES BY COLLECTORS.		FINES BY MAGISTRATES.		COLLECTIONS.					REMARKS.	
Number of licenses.	Amount charged.	Number of penalties.	Amount of penalties.	Number.	Amount of fines.	Fees.	Penalties.	Fines.	Total.	Balance.		
...	...	...	...	...	...	...	...	...	...	...	Population	3,32,577
...	...	...	...	...	...	...	...	...	...	...		
...	...	...	...	...	...	...	...	...	...	...	No. of villages	485
...	...	...	...	...	...	...	...	...	...	...		
...	...	...	...	...	...	...	...	...	...	...	No. of villages in which there are licenses.	49
1	75	...	...	...	...	75	...	...	75	...	No. of tax-payers per 1,000 of population.	0·61
16	800	...	...	...	...	800	...	...	800	...		
35	875	...	...	...	...	875	...	...	875	...		
151	1,510	...	...	...	...	1,510	...	...	1,510	...	Incidence of taxation per 1,000 of population.	9/12/10
203	3,260	...	...	...	...	3,260	...	...	3,260	...		
203	3,260	...	...	...	...	3,260	...	...	3,260	...		
2,394	33,355	1	10	206	681	31,295	10	...	31,305	2,060		
2	1,000	...	...	...	...	1,000	...	...	1,000	...	Population	5,92,674
3	600	...	...	...	...	600	...	...	600	...		
3	450	...	...	...	...	450	...	...	450	...	No. of villages	690
4	400	...	...	...	...	400	...	...	400	...		
12	2,450	...	...	...	...	2,450	...	...	2,450	...	No. of villages in which there are licenses.	102
4	300	...	...	...	...	300	...	...	300	...	No. of tax-payers per 1,000 of population.	1·63
24	1,200	...	...	...	...	1,200	...	...	1,200	...		
90	2,250	...	...	...	...	2,225	...	...	2,225	25		
838	8,380	...	...	...	...	8,000	...	...	8,000	380	Incidence of taxation per 1,000 of population.	24/9/7
956	12,130	...	...	...	...	11,725	...	..	11,725	405		
968	14,580	...	...	...	...	14,175	...	...	14,175	405		
...	...	...	...	...	...	...	...	...	...	...	Population	4,07,075
...	...	...	...	...	...	...	...	...	...	...		
...	...	...	...	...	...	...	...	...	...	...	No. of villages	1,183
...	...	...	...	...	...	...	...	...	...	...		
...	...	...	...	...	...	...	...	...	...	...	No. of villages in which there are licenses.	57
...	...	...	...	...	...	...	...	...	...	...	No. of tax-payers per 1,000 of population.	0·53
1	50	...	...	...	...	50	...	...	50	...		
29	725	...	...	...	...	725	...	...	725	...		
187	1,870	...	...	...	...	1,870	...	...	1,870	...	Incidence of taxation per 1,000 of population.	6/7/11
217	2,645	...	...	...	...	2,645	...	...	2,645	...		
217	2,645	...	...	...	...	2,645	...	...	2,645	...		
...	...	...	...	...	...	...	...	...	...	...	Population	1,81,540
...	...	...	...	...	...	...	...	...	...	...		
...	...	...	...	...	...	...	...	...	...	...	No. of villages	367
...	...	...	...	...	...	...	...	...	...	...		
...	...	...	...	...	...	...	...	...	...	...	No. of villages in which there are licenses.	17
...	...	...	...	...	...	...	...	...	...	...	No. of tax-payers per 1,000 of population.	0·46
4	200	...	...	...	...	200	...	...	200	...		
11	275	...	...	...	...	275	...	...	275	...		
70	700	...	...	...	...	700	...	...	700	...		
85	1,175	...	...	...	...	1,175	...	...	1,175	...	Incidence of taxation per 1,000 of population.	6/7/6
85	1,175	...	...	...	...	1,175	...	...	1,175	...		
1,270	18,400	...	...	...	...	17,995	...	...	17,995	405		
27,685	4,60,931	81	965	207	686	4,57,809	875	5	4,58,689	3,122		

FORM No. II.

DETAIL OF EXPENDITURE DURING 1884-85.

Division.	District.	Establishment.	Travelling allowance.	Contingencies.	Total.	Percentage of expenditure on collections.
		Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
DELHI.	Delhi	90 0 0	...	...	90 0 0	0 2 11
	Gurgaon	...	...	...	...	...
	Rohtak...	62 0 0	...	...	62 0 0	0 6 1
	Hissar	50 0 0	...	4 5 4	54 5 4	0 6 5
	Karnál...	50 0 0	...	...	50 0 0	0 7 6
	Umballa	...	...	15 15 0	15 15 0	0 0 9
	Simla	...	...	27 4 0	27 4 0	0 5 4
	Total	252 0 0	...	47 8 4	299 8 4	0 3 4
JULLUNDUR.	Ludhiána	70 0 0	...	...	70 0 0	0 6 3
	Ferozepore	...	...	0 14 0	0 14 0	0 0 1
	Jullundur	90 0 0	...	...	90 0 0	0 7 4
	Hoshiárpur	...	...	...	...	...
	Kángra	50 0 0	...	...	50 0 0	0 11 4
	Total	210 0 0	...	0 14 0	210 14 0	0 4 7
LAHORE.	Gurdáspur	75 0 0	...	...	75 0 0	0 7 5
	Amritsar	...	...	...	...	...
	Lahore...	...	...	...	...	...
	Jhang...	...	...	50 0 0	50 0 0	0 5 8
	Montgomery	70 0 0	...	...	70 0 0	0 12 2
	Mooltan	20 0 0	...	18 14 0	38 14 0	0 3 0
	Total	165 0 0	...	68 14 0	233 14 0	0 3 3
RAWALPINDI.	Ráwálpindi	61 12 0	...	8 4 0	70 0 0	0 5 10
	Jhelum	...	...	50 0 0	50 0 0	0 7 9
	Gujrat...	48 3 5	...	...	48 3 5	0 8 0
	Shahpur	7 1 6	...	4 6 4	11 7 10	0 2 6
	Gujránwála	...	...	...	...	...
	Siálkot...	...	...	...	...	...
	Total	117 0 11	...	62 10 4	179 11 3	0 3 6
DERAJAT.	Muzaffargarh...	32 0 0	18 0 0	...	50 0 0	0 7 2
	Dera Gházi Khan	...	...	...	...	...
	Dera Ismail Khan	50 0 0	...	...	50 0 0	0 7 6
	Bannu	50 0 0	...	...	50 0 0	1 8 6
	Total	132 0 0	18 0 0	...	150 0 0	0 7 8
PESHAWAR.	Pesháwar	50 0 0	...	...	50 0 0	0 5 8
	Hazára...	...	...	...	...	...
	Kohát	...	...	...	...	...
	Total	50 0 0	...	...	50 0 0	0 4 6
	GRAND TOTAL	926 0 11	18 0 0	179 14 8	1,123 15 7	0 3 11

FORM No. III.

FINAL DEMAND AND COLLECTIONS OF LICENSE FEES

(AS SHOWN IN COLUMNS 10, 11 AND 16 OF FORM No. I.)

DISTRIBUTED AMONGST THE

DIFFERENT TRADES, DEALINGS, AND INDUSTRIES

DURING THE YEAR 1884-85.

FINAL DEMAND AND COLLECTIONS OF LICENSE FEES (AS SHOWN IN TRADES, DEALINGS, AND INDUS

TRADES, DEALINGS, AND INDUSTRIES.	I. CLASS.—*First Grade*, Rs. 500.			I. CLASS.—*Second Grade*, Rs. 200.			I. CLASS.—*Third Grade*, Rs. 150.			I. CLASS.—*Fourth Grade*, Rs. 100.		
	No. of licenses.	Final fees charged.	Collections.	No. of licenses.	Final fees charged.	Collections.	No. of licenses.	Final fees charged.	Collections.	No. of licenses.	Final fees charged.	Collections.
Agents	...	...	...	...	...	...	...	...	...	3	300	300
Artisans (not keeping shops for the sale of manufactured articles)	...	...	...	1	200	200	...	...	...	2	200	200
Bankers	9	4,500	4,500	26	5,200	5,200	23	3,450	3,450	62	6,200	6,200
Brokers	...	...	...	...	...	...	...	...	...	...	...	...
Contractors	1	500	500	1	200	200	5	750	750	...	...	...
Dealers in animals ...	...	...	...	...	...	...	...	...	...	1	100	100
Dealers in agricultural produce	...	...	...	1	200	200	...	...	...	...	...	...
Hotel-keepers	...	...	...	...	...	...	3	450	450	4	400	400
Letters out of conveyances, horses or cattle (livery stable-keepers)	...	...	...	...	...	...	...	...	...	...	...	...
Manufacturers, wholesale, of—												
1. Cotton goods ...	...	...	...	...	...	...	1	150	150	1	100	100
2. Woollen goods ...	...	...	...	...	...	...	...	...	...	...	...	...
3. Jute, flax and hemp	...	...	...	...	...	...	...	...	...	...	...	...
4. Silk	...	...	...	...	...	...	...	...	...	1	100	100
5. Indigo	...	...	...	...	...	...	...	...	...	1	100	100
6. Sugar	...	...	...	1	200	200	2	300	300	1	100	100
7. Tea	...	...	...	...	...	...	...	...	...	...	...	...
8. Metals and machinery	...	...	...	...	...	...	...	...	...	...	...	...
9. Others	2	1,000	1,000	2	400	400	1	150	150	2	200	200
Merchants—												
1. General	2	1,000	1,000	13	2,600	2,600	4	600	600	20	2,000	2,000
2. Opium	...	...	...	...	...	...	...	...	...	...	...	...
3. Piece-goods	1	500	500	10	2,000	2,000	4	600	600	12	1,200	1,200
4. Grains	...	...	...	1	200	200	3	450	450	15	1,500	1,500
5. Salt	...	...	...	...	...	...	...	...	...	...	...	...
6. Others	...	...	...	...	...	...	...	...	...	3	300	300
7. Money-changers ...	...	...	...	...	...	...	...	...	...	1	100	100
8. Money-lenders ...	...	...	...	7	1,400	1,400	17	2,550	2,550	52	5,200	5,200
9. Owners of conveyances, horses or cattle plying for hire	...	...	...	...	...	...	...	...	...	...	...	...
10. Ship or boat-owners	...	...	...	...	...	...	...	...	...	...	...	...
Traders in—												
1. Woven fabrics and dress	...	...	...	1	200	200	...	...	...	1	100	100
2. Buildings, materials and furniture ...	...	...	...	2	400	400	1	150	150	4	400	400
3. Metals	...	...	...	...	...	...	...	...	...	1	100	100
4. Food	...	...	...	...	...	...	...	...	...	1	100	100
5. Salt	...	...	...	...	...	...	...	...	...	...	...	...
6. Spirits, drugs and tobacco	2	1,000	1,000	1	200	200	...	...	...	1	100	100
7. Fuel	...	...	...	...	...	...	...	...	...	...	...	...
8. Animals and vegetable substances (not food)	...	...	...	...	...	...	...	...	...	...	...	...
9. Books and stationery	...	...	...	...	...	...	...	...	...	...	...	...
10. Miscellaneous ...	2	1,000	1,000	2	400	400	...	...	...	4	400	400
Joint Stock Companies—												
1. Banking	2	1,000	1,000	...	...	...	...	...	...	...	...	...
2. Cotton-spinning and weaving	...	...	...	...	...	...	...	...	...	...	...	...
3. Gas	...	...	...	...	...	...	...	...	...	...	...	...
4. Insurance	...	...	...	...	...	...	...	...	...	...	...	...
5. Jute and hemp ...	...	...	...	...	...	...	...	...	...	...	...	...
6. Land	...	...	...	...	...	...	...	...	...	...	...	...
7. Navigation	...	...	...	...	...	...	...	...	...	...	...	...
8. Press...	...	...	...	...	...	...	...	...	...	...	...	...
9. Railway	...	...	...	...	...	...	...	...	...	...	...	...
10. Telegraph	...	...	...	...	...	...	...	...	...	...	...	...
11. Trading	...	...	...	...	...	...	...	...	...	...	...	...
12. Tramway	...	...	...	...	...	...	...	...	...	...	...	...
13. Others	...	...	...	...	...	...	...	...	...	...	...	...
Total	21	10,500	10,500	69	13,800	13,800	64	9,600	9,600	193	19,300	19,300

COLUMNS 10, 11 AND 16 OF FORM No. I.) DISTRIBUTED AMONGST THE DIFFERENT TRIES, DURING THE YEAR 1884-85.

II. CLASS.—*First Grade*, Rs. 75.			II. CLASS.—*Second Grade*, Rs. 50.			II. CLASS.—*Third Grade*, Rs. 25.			II. CLASS.—*Fourth Grade*, Rs. 10.			TOTAL.		
No. of licenses.	Final fees charged.	Collections.	No. of licenses.	Final fees charged.	Collections.	No. of licenses.	Final fees charged.	Collections.	No. of licenses.	Final fees charged.	Collections.	No. of licenses.	Final fees charged.	Collections.
7	525	525	34	1,700	1,700	73	1,825	1,825	254	2,540	2,520	371	6,890	6,870
1	75	75	...	...	...	1	25	25	31	310	310	36	810	810
65	4,875	4,875	175	8,750	8,750	755	18,875	18,850	2,245	22,450	22,420	3,360	74,300	74,245
2	150	150	8	400	400	49	1,225	1,225	261	2,610	2,550	320	4,385	4,325
14	1,050	1,050	34	1,700	1,700	91	2,275	2,225	248	2,480	2,430	394	8,955	8,855
...	...	...	1	50	50	8	200	200	36	360	360	46	710	710
4	300	300	38	1,900	1,900	224	5,600	5,600	871	8,710	8,200	1,138	16,710	16,200
2	150	150	6	300	300	17	425	400	12	120	110	44	1,845	1,810
...	...	...	1	50	50	10	250	250	37	370	370	48	670	670
...	...	...	2	100	100	5	125	125	18	180	180	27	655	655
...	...	...	1	50	50	6	150	150	31	310	310	38	510	510
...	...	...	1	50	50	2	50	50	5	50	50	8	150	150
...	...	...	6	300	300	12	300	300	41	410	410	60	1,110	1,110
2	150	150	3	150	150	16	400	400	29	290	290	51	1,090	1,090
6	450	450	21	1,050	1,050	128	3,200	3,200	568	5,680	5,680	727	10,980	10,980
1	75	75	...	...	...	5	125	125	4	40	40	10	240	240
...	...	...	...	...	...	3	75	75	81	810	790	84	885	865
3	225	225	14	700	700	54	1,350	1,350	183	1,830	1,820	261	5,855	5,845
12	841	766	40	2,000	2,000	86	2,150	2,150	265	2,650	2,640	442	13,841	13,756
...	...	...	1	50	50	2	50	50	14	140	140	17	240	240
23	1,725	1,725	30	1,500	1,500	204	5,100	5,083	735	7,350	7,270	1,019	19,975	19,878
26	1,950	1,950	167	8,350	8,350	670	16,750	16,750	3,730	37,300	37,230	4,612	66,500	66,430
1	75	75	...	...	...	12	300	300	48	480	480	61	855	855
4	300	300	24	1,200	1,200	196	4,900	4,875	831	8,310	7,935	1,058	15,010	14,610
7	525	525	27	1,350	1,350	81	2,025	2,025	277	2,770	2,710	393	6,770	6,710
90	6,750	6,750	317	15,850	15,850	1,599	39,975	39,910	5,890	58,900	58,770	7,972	1,30,625	1,30,430
...	...	...	1	50	50	21	525	500	130	1,300	1,290	152	1,875	1,840
...	...	...	...	...	...	...	...	...	9	90	90	9	90	90
3	225	225	37	1,850	1,850	129	3,225	3,225	571	5,710	5,710	742	11,310	11,310
...	...	...	13	650	650	35	875	875	143	1,430	1,430	198	3,905	3,905
1	75	75	17	850	850	24	600	600	154	1,540	1,530	197	3,165	3,155
2	150	150	16	800	800	138	3,450	3,450	1,465	14,650	14,630	1,622	19,150	19,130
...	...	...	...	...	...	7	175	175	33	330	330	40	505	505
2	150	150	...	...	...	19	475	475	100	1,000	990	125	2,925	2,915
...	...	...	...	...	...	2	50	50	63	630	630	65	680	680
...	...	...	2	100	100	6	150	150	42	420	420	50	670	670
...	...	...	...	...	...	...	...	...	12	120	120	12	120	120
11	825	825	30	1,500	1,500	153	3,825	3,785	1,642	16,420	15,130	1,844	24,370	23,040
...	...	...	...	...	...	...	...	...	...	...	...	2	1,000	1,000
...	...	...	...	...	...	...	...	...	1	10	10	1	10	10
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	2	20	20	2	20	20
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
3	225	225	...	...	...	7	175	175	17	170	170	27	570	570
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
292	21,841	21,766	1,067	53,350	53,350	4,850	1,21,250	1,20,978	21,129	2,11,290	2,08,515	27,685	4,60,931	4,57,809

FORM A.,

SHOWING THE RESULTS OF OBJECTIONS AND APPEALS.

1	2	3								4	5	6								7
Class and Grade in which originally assessed.	No. of objections.	Class and Grade in which assessed after Disposal of Objections.								No. exempted on objections.	No. of persons who appealed.	Class and Grade in which assessed after Disposal of Appeals.								No. exempted on appeals.
		I.—1	I.—2	I.—3	I.—4	II.—1	II.—2	II.—3	II.—4			I.—1	I.—2	I.—3	I.—4	II.—1	II.—2	II.—3	II.—4	
I.—1	8	5	2	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
I.—2	13	...	8	4	1	..	...	...	...	..	2	...	2	...	...	...	...	...	...	...
I.—3	23	...	...	12	5	3	...	...	1	2	2	...	1	1	...	...	...	...	...	...
I.—4	61	...	...	...	35	11	9	...	1	5	3	...	...	...	2	1	...	...	...	...
II.—1	98	...	...	...	...	56	30	4	3	5	6	...	...	...	...	5	1	...	...	...
II.—2	379	...	...	...	...	1	203	143	10	22	23	...	...	...	...	...	15	7	1	...
II.—3	1,414	...	...	...	..	...	...	826	468	120	93	...	...	..	...	...	...	43	43	7
II.—4	5,844	...	...	..	..	...	...	...	3,671	2,173	298	...	...	...	...	...	...	...	114	184
Total... ...	7,840	5	10	16	41	72	242	973	4,154	2,327	427	...	3	1	2	6	16	50	158	191

FORM B.

STATEMENT SHOWING TAXATION IN TOWNS

HAVING A POPULATION OF 5,000 AND UPWARDS.

FORM B.

STATEMENT SHOWING TAXATION IN TOWNS HAVING A POPULATION OF 5,000 AND UPWARDS—(*see Census Table*).

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
							Fees Charged.								
							Class I.		*Class II.*		*Total.*				
Division.	District.	Name of Town.	Total population.	Class of municipality, if a municipal town.	Income of municipality, if a municipal town.	Percentage borne by license tax assessment to income of municipal town.	No. of licenses.	Amount of fees.	No. of licenses.	Amount of fees.	No. of licenses.	Amount of fees.	Average fee for each license.	Incidence of taxation per 1,000 of population.	No. of persons taxed per 1,000 of population.
					Rs.	Rs. A. P.		Rs.		Rs.		Rs.	Rs. A. P.	Rs. A. P.	
H I.	DELHI.	*Delhi*	1,73,393	1st	2,76,162	10 15 10	59	10,550	1,051	19,805	1,110	30,355	27 5 6	175 1 0	6·40
		Sonepat	13,077	2nd	9,551	22 0 7	...	...	119	2,105	119	2,105	17 11 0	160 15 6	9·09
		Ballabgarh	5,821	3rd	3,742	11 7 10	...	...	24	430	24	430	17 14 8	73 13 11	4·12
		Faridabad	7,427	3rd	3,312	10 1 2	...	...	25	340	25	340	13 9 7	45 12 5	3·36
		Total	1,99,718	...	2,92,767	11 5 7	59	10,550	1,219	22,680	1,278	33,230	26 0 0	166 6 1	6·39
	GURGAON.	Farukhnagar	8,738	3rd	5,712	8 6 5	...	...	39	480	39	480	12 4 11	54 14 11	4·46
		Sohna	7,374	...	4,208	7 0 2	...	...	25	295	25	295	11 12 9	40 2 3	3·44
		Rewári	23,972	...	35,813	5 4 10	...	...	124	1,900	124	1,900	15 5 1	79 4 1	5·17
		Palwal	10,635	...	6,398	9 14 9	...	...	40	635	40	635	15 14 0	59 11 4	3·76
		Hodal	6,453	...	2,124	13 10 5	...	...	23	290	23	290	12 9 8	44 15 0	3·56
		Firozpur	6,878	...	5,902	6 7 0	...	...	32	380	32	380	21 14 0	55 3 11	4·65
		Total	64,050	...	60,157	6 10 1	...	...	283	3,980	283	3,980	14 1 0	62 2 2	4·42
	ROHTAK.	Rohtak	15,699	3rd	6,945	5 13 3	1	150	16	255	17	405	23 13 2	25 12 9	1·08
		Beri	9,695	3rd	6,461	41 7 8	7	1,500	58	1,180	65	2,680	41 3 8	276 6 10	6·70
		Kallanaur	7,371	...	...	...	...	...	6	115	6	115	19 2 8	15 9 7	0·81
		Mahm	7,315	...	...	...	2	350	17	245	19	595	31 5 0	81 5 5	2·59
		Kauhaur	5,251	...	...	...	...	...	4	70	4	70	17 8 0	13 5 3	0·76
		Sanghi	5,194	...	...	...	...	...	18	325	18	325	18 0 10	62 9 1	3·46
		Jhajjar	11,650	3rd	5,192	13 13 9	...	...	44	720	44	720	16 5 10	61 12 10	3·77
		Bahádargarh	6,674	3rd	3,445	11 2 9	...	...	21	385	21	385	18 5 4	57 10 11	3·14
		Mundlána	5,469	...	...	...	...	...	18	250	18	250	13 14 2	45 11 4	3·29
		Butána	7,656	...	...	...	...	...	26	330	26	330	12 11 0	43 1 8	3·39
		Gohána	7,444	3rd	4,406	10 7 0	...	...	34	460	34	460	13 8 5	61 12 8	4·56
		Baroda	5,900	...	...	...	...	...	13	160	13	160	12 4 11	27 1 10	2·20
		Total	95,318	...	26,449	24 8 10	10	2,000	275	4,495	285	6,495	22 12 7	68 2 2	2·98

HISSAR.	Bhiwáni				33,762	2nd	33,469	15 11 5	7	1,400	214	3,860	221	5,260	23 12 10	155 12 9	6·55
	Hissar				14,167	2nd	15,711	5 6 7	1	100	45	750	46	850	18 7 8	60 0 0	3·25
	Sirsa				12,292	2nd	30,918	2 14 4	1	100	49	795	50	895	17 14 5	72 13 0	4·07
	Hansi				12,656	2nd	10,601	6 3 7	...	...	39	660	39	660	16 14 8	52 2 5	3·08
	Sása ...				5,174	...	...	...	...	...	11	170	11	170	15 7 3	32 13 8	2·13
		Total			78,051	...	90,699	8 10 3	9	1,600	358	6,235	367	7,835	21 5 7	100 6 0	4·70
KARNAL.	Karnál				23,133	2nd	18,276	5 7 6	...	...	68	1,000	68	1,000	14 11 3	43 3 7	2·93
	Pánipat				25,022	2nd	20,472	3 9 0	...	...	54	710	54	710	13 2 4	28 6 0	2·15
	Kaithal				14,754	2nd	11,042	7 11 9	...	...	62	1,100	62	1,100	17 11 10	74 13 3	4·20
	Sewán				5,717	...	...	...	...	...	10	255	10	255	25 8 0	44 9 7	1·75
		Total			68,626	...	49,790	6 2 5	...	...	194	3,065	194	3,065	15 12 9	44 10 7	2·82
UMBALLA.	Umballa				67,463	2nd	73,607	11 3 10	10	1,200	422	7,075	432	8,275	19 2 6	122 10 7	6·40
	Jagádhri				12,300	3rd	14,253	17 7 6	3	400	101	2,090	104	2,490	23 15 1	202 7 0	8·45
	Búriya				7,411	3rd	3,642	8 10 5	...	...	21	315	21	315	15 0 0	42 8 1	2·83
	Rupar				10,326	3rd	5,284	23 4 5	...	...	75	1,230	75	1,230	16 6 5	119 1 10	7·26
	Sadháura				10,794	3rd	4,696	19 9 5	1	100	52	810	53	910	17 2 9	84 4 11	4·91
	Thánesar				6,005	3rd	3,725	16 3 10	2	200	35	405	37	605	16 5 7	100 12 0	6·16
	Shahábad				10,218	3rd	5,089	26 2 2	2	200	46	1,130	48	1,330	27 11 4	130 2 7	4·69
		Total			1,24,517	...	1,10,296	13 11 10	18	2,100	752	13,055	770	15,155	19 10 11	137 6 5	6·10
SIMLA.	Simla				12,305	1st	2,02,141	3 2 1	13	3,250	165	3,150	178	6,400	35 15 3	520 1 0	14·46
		Total			12,305	...	2,02,141	3 2 1	13	3,250	165	3,150	178	6,400	35 15 3	520 1 0	14·46
	TOTAL DELHI DIVISION				6,42,585	...	8,32,299	9 2 4	109	19,500	3,246	56,660	3,355	76,160	22 11 2	118 7 0	5·22
JULLUNDUR.	LUDHIANA.	Ludhiána			44,163	2nd	55,417	12 8 4	11	1,250	307	5,690	318	6,940	21 13 6	157 2 4	7·20
		Jagraon			16,873	3rd	8,448	26 0 5	4	500	96	1,705	100	2,205	22 0 9	130 10 11	5·92
		Ráikot			9,219	3rd	3,619	21 12 9	...	...	55	755	55	755	13 11 7	81 14 3	5·96
		Máchiwára			5,967	3rd	2,406	33 4 0	...	...	49	800	49	800	16 5 2	134 1 2	8·21
		Total			76,222	...	69,890	15 4 11	15	1,750	507	8,950	522	10,700	20 8 0	140 6 0	6·84
	FEROZEPORE.	Ferozepore City			20,870	2nd	41,586	7 0 9	9	1,250	101	1,680	110	2,930	26 10 2	140 6 3	5·27
		Do. Cantonment			18,700	3rd	10,805	8 8 3	...	...	51	920	51	920	18 0 8	49 3 3	2·73
		Moga...			6,430	3rd	779	10 14 7	...	...	7	85	7	85	12 2 3	13 3 6	1·09
		Mehráj			5,758	...	...	...	...	...	13	150	13	150	11 8 7	26 0 10	2·25
		Dharmkot			6,007	3rd	1,865	28 2 5	...	...	31	525	31	525	16 15 0	87 6 4	5·16
		Fázilka			6,851	3rd	14,430	17 6 10	6	700	113	1,815	119	2,515	21 2 2	367 1 7	17·36
		Total			64,616	...	69,465	10 4 3	15	1,950	316	5,175	331	7,125	21 8 5	110 4 3	5·12

FORM B.—*continued.*

STATEMENT SHOWING TAXATION IN TOWNS HAVING A POPULATION OF 5,000 AND UPWARDS—(*see Census Table*)—*continued.*

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
							Fees Charged.								
							Class I.		*Class II.*		*Total.*				
Division.	District.	Name of Town.	Total population.	Class of municipality, if a municipal town.	Income of municipality, if a municipal town.	Percentage borne by license tax assessment to income of municipal town.	No. of licenses.	Amount of fees.	No. of licenses.	Amount of fees.	No. of licenses.	Amount of fees.	Average fee for each license.	Incidence of taxation per 1,000 of population.	No. of persons taxed per 1,000 of population.
					Rs.	Rs. A. P.		Rs.		Rs.		Rs.	Rs. A. P.	Rs. A. P.	
JULLUNDUR—*concluded.*	JULLUNDUR.	Jullundur City	42,651	2nd	35,550	9 12 8	8	1,050	186	2,430	194	3,480	17 15 0	81 9 6	4·54
		Do. Cantonment	9,468	2nd	12,858	5 5 10	...	...	51	770	51	770	15 1 7	81 5 3	5·38
		Kartárpur	9,260	3rd	4,386	12 14 1	...	...	41	565	41	565	13 12 6	61 0 3	4·42
		Phillour	7,107	3rd	5,715	18 0 4	2	200	35	830	37	1,030	27 13 5	144 14 10	5·21
		Núrmahal	8,161	3rd	4,597	21 12 1	1	150	43	850	44	1,000	22 11 7	122 8 6	5·39
		Bilga	6,634	...	...	...	...	...	26	375	26	375	14 6 9	56 8 5	3·92
		Jandiála	6,326	...	...	...	...	...	21	340	21	340	16 3 0	53 11 11	3·32
		Rurka Kalán	5,492	...	...	...	...	...	9	160	9	160	17 12 5	29 2 1	1·64
		Ráhon	11,736	3rd	6,291	14 15 1	...	...	60	940	60	940	15 10 8	73 12 1	4·71
		Mahatpur	6,011	3rd	1,816	20 14 9	1	100	22	280	23	380	16 8 4	63 3 6	3·82
		Nakodar	8,486	3rd	4,332	30 0 2	3	350	52	950	55	1,300	23 10 2	153 3 1	6·48
		Total	1,21,332	...	75,545	13 11 0	15	1,850	546	8,490	561	10,340	18 6 11	85 3 6	4·62
	HOSHIARPUR.	Hoshiárpur	21,363	2nd	26,325	8 7 2	5	550	126	1,675	131	2,225	16 15 9	104 2 5	6·14
		Hariána	●6,472	3rd	2,539	22 7 2	...	...	38	570	38	570	15 0 0	88 1 2	5·87
		Garhshankar	5,275	3rd	1,558	7 11 2	...	...	9	120	9	120	13 5 4	22 11 10	1·71
		Anandpur	5,878	3rd	1,953	6 14 7	...	...	12	135	12	135	11 4 0	22 15 6	2·04
		Dasúya	6,248	3rd	2,163	12 4 0	...	...	18	265	18	265	14 11 7	42 6 7	2·88
		Urmar	7,120	3rd	4,680	19 0 0	...	...	61	890	61	890	14 9 5	125 0 0	8·57
		Miáni	6,499	3rd	1,283	9 5 0	...	...	9	120	9	120	13 5 4	18 7 5	1·38
		Total	58,855	...	40,501	10 10 10	5	550	273	3,775	278	4,325	15 8 11	73 7 11	4·72
	KANGRA.	Kángra	5,387	2nd	4,346	7 11 3	...	...	29	335	29	335	11 8 9	62 2 11	5·38
		Núrpur	5,744	2nd	5,377	6 14 1	...	...	28	370	28	370	13 3 5	64 6 7	4·87
		Total	11,131	...	9,723	7 4 0	...	...	57	705	57	705	12 5 10	63 5 3	5·12
		Total Jullundur Division ...	3,32,156	...	2,65,124	12 8 3	50	6,100	1,699	27,095	1,749	33,195	18 15 8	99 15 0	5·26

GURDASPUR.	Batála	24,281	2nd	20,578	15 15 0	7	850	110	2,430	117	3,280	28 0 6	135 1 5	4·81
	Dera Nának	5,956	2nd	5,119	9 9 1	...	...	28	490	28	490	17 8 0	82 4 4	4·70
	Dínanagar	5,589	2nd	7,185	9 9 7	1	200	29	490	30	690	23 0 0	123 7 3	5·36
	Sujánpur	6,039	2nd	3,252	6 14 8	...	...	17	225	17	225	13 3 9	37 4 1	2·81
	Total	41,865	...	36,134	12 15 5	8	1,050	184	3,635	192	4,685	24 6 5	111 14 6	4·58
AMRITSAR.	Amritsar	1,51,896	1st	3,05,250	6 15 7	28	4,550	1,036	16,735	1,064	21,285	20 0 1	140 2 10	7·04
	Jandiálah	6,535	3rd	5,417	1 14 6	...	...	39	645	39	645	16 8 7	89 11 2	5·97
	Majítha	6,053	3rd	2,204	15 10 5	...	...	26	345	26	345	13 4 4	56 15 11	4·30
	Bundála	5,101	...	...	...	...	...	13	200	13	200	15 6 2	39 3 3	2·55
	Vairowál	5,409	3rd	1,951	21 4 4	...	...	23	415	23	415	18 0 8	76 11 7	4·25
	Sarháli	5,197	...	...	...	...	...	11	260	11	260	23 10 2	50 0 6	2·11
	Total	1,80,191	...	3,14,822	7 5 7	28	4,550	1,148	18,600	1,176	23,150	19 10 11	128 7 7	6·53
LAHORE.	Lahore	1,30,960	1st	2,55,722	3 12 8	16	2,800	404	6,891	420	9,691	23 2 1	73 15 6	3·19
	Mian Mir	18,409	...	12,175	11 10 7	2	600	45	820	47	1,420	30 3 5	77 2 2	2·55
	Chunián	8,122	3rd	6,258	11 4 3	1	150	39	555	40	705	17 10 0	86 12 10	4·92
	Kasúr	17,336	3rd	20,100	9 1 8	...	...	111	1,830	111	1,830	16 7 9	105 9 0	6·40
	Palri	6,407	3rd	4,003	14 15 10	...	...	51	600	51	600	11 12 3	93 10 4	7·96
	Khem Karn	5,516	3rd	4,413	15 8 4	...	...	46	685	46	685	14 14 3	124 2 11	8·33
	Rája Jang	5,187	...	...	...	...	...	21	240	21	240	11 6 10	46 4 4	4·05
	Sur Singh	5,104	...	...	...	...	...	22	235	22	235	10 10 11	46 0 8	4·31
	Total	1,97,041	...	3,02,671	5 1 5	19	3,550	739	11,856	758	15,406	20 5 8	78 2 8	3·84
JHANG.	Jhang Maghiána	21,629	2nd	25,468	7 5 6	...	...	145	1,870	145	1,870	12 14 4	86 7 4	6·70
	Chiniot	10,731	3rd	7,000	7 14 10	...	...	33	555	33	555	16 13 1	51 11 7	3·08
	Total	32,360	...	32,468	7 7 6	...	...	178	2,425	178	2,425	13 10 0	74 15 0	5·50
MONTGOMERY.	Kamália	7,594	3rd	4,398	12 11 9	...	...	43	560	43	560	13 0 4	73 11 10	5·66
	Pákpattan	5,993	3rd	4,246	11 7 9	2	200	20	285	22	485	22 0 9	80 14 10	3·67
	Total	13,587	...	8,644	12 1 5	2	200	63	845	65	1,045	16 1 3	76 14 7	4·78
MOOLTAN.	Mooltan	68,674	1st	1,03,686	5 11 8	9	1,250	292	4,690	301	5,940	19 11 8	86 7 11	4·38
	Shujabad	6,458	3rd	6,625	16 10 10	...	...	78	1,105	78	1,105	14 2 8	171 1 8	12·07
	Total	75,132	...	1,10,311	6 6 2	9	1,250	370	5,795	379	7,045	18 9 2	93 12 3	5·04
	TOTAL LAHORE DIVISION	5,40,176	...	7,05,050	7 9 11	66	10,600	2,682	43,156	2,748	53,756	19 9 0	99 8 3	5·08

FORM B.—*continued.*

STATEMENT SHOWING TAXATION IN TOWNS HAVING A POPULATION OF 5,000 AND UPWARDS—(*see Census Table*)—*continued.*

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
							Fees Charged.								
							Class I.		*Class II.*		Total.				
Division.	District.	Name of Town.	Total population.	Class of municipality, if a municipal town.	Income of municipality, if a municipal town.	Percentage borne by license tax assessment to income of municipal town.	No. of licenses.	Amount of fees.	No. of licenses.	Amount of fees.	No. of licenses.	Amount of fees.	Average fee for each license.	Incidence of taxation per 1,000 of population.	No. of persons taxed per 1,000 of population.
					Rs.	Rs. A. P.		Rs.		Rs.		Rs.	Rs. A. P.	Rs. A. P.	
RAWALPINDI.	RAWALPINDI.	Ráwalpindi City	26,785	2nd	91,283	3 15 2	4	900	178	2,705	182	3,605	19 12 11	134 11 5	6·79
		Do. Cantonment ...	26,190	3rd	24,849	9 1 10	4	600	100	1,865	104	2,465	23 11 2	94 1 11	3·97
		Hazro	6,533	3rd	10,420	5 12 1	...	...	36	600	36	600	16 10 8	91 13 5	5·51
		Pindigheb	8,583	3rd	3,124	10 3 7	...	...	26	320	26	320	12 4 11	37 4 6	3·02
		Total	68,091	...	1,29,676	5 6 2	8	1,500	340	5,490	348	6,990	20 1 4	102 10 6	5·11
	JHELUM.	Jhelum	21,107	2nd	22,002	6 11 7	2	200	89	1,280	91	1,480	16 4 2	70 1 11	4·31
		Pind Dádan Khan...	16,724	2nd	22,592	4 8 11	1	100	68	930	69	1,030	14 14 10	61 9 4	4·12
		Chakwál	5,717	3rd	3,498	18 7 1	...	...	39	645	39	645	16 8 7	112 13 2	6·82
		Bhún	5,080	...	...	...	...	...	5	80	5	80	16 0 0	15 11 10	0·98
		Talágang	6,236	3rd	1,385	15 8 4	...	...	20	215	20	215	10 12 0	34 7 7	3·20
		Láwa	6,245	...	...	...	...	...	3	30	3	30	10 0 0	4 12 10	0·48
		Total	61,109	...	49,477	7 0 7	3	300	224	3,180	227	3,480	15 5 3	56 15 2	3·71
	SHAHPUR.	Sahiwál	8,880	3rd	6,784	10 5 7	...	...	50	700	50	700	14 0 0	78 13 3	5·63
		Shahpur	7,752	3rd	1,275	13 5 2	...	...	11	170	11	170	15 7 3	21 14 10	1·42
		Khusháb	8,989	3rd	6,920	3 8 8	...	...	15	245	15	245	16 5 4	27 4 1	1·68
		Bhera	15,165	3rd	8,731	7 13 6	...	...	49	685	49	685	13 15 8	45 2 9	3·27
		Miáni	8,069	3rd	3,846	13 12 6	...	...	46	530	46	530	11 8 4	65 10 11	5·70
		Total	48,855	...	27,556	8 7 3	...	...	171	2,330	171	2,330	13 9 10	47 11 1	3·50

RAWALPINDI—*concluded.*	GUJRAT.	Gujrát	18,743	2nd	11,435	4 15 0	...	...	43	565	43	565	13 2 3	30 2 4	2·29
		Jalálpur	12,839	3rd	8,174	5 14 11	...	...	41	485	41	485	11 13 3	37 9 11	3·19
		Kunjah	5,799	3rd	2,046	12 10 8	...	...	17	260	17	260	15 4 5	44 13 4	2·93
		Dingah	5,015	3rd	2,077	12 4 2	...	...	47	670	47	670	14 4 1	133 9 7	9·37
		Total	42,396	...	23,732	8 5 6	...	...	148	1,980	148	1,980	13 6 0	46 11 3	3·49
	GUJRANWALA.	Gujránwála	22,884	2nd	41,832	3 9 11	...	...	95	1,515	95	1,515	15 15 1	66 3 3	4·15
		Eminabad	5,886	3rd	2,205	14 0 11	...	...	16	310	16	310	19 6 0	52 10 8	2·71
		Wazirabad	16,462	3rd	14,837	14 10 9	...	...	61	895	61	895	14 10 9	54 5 10	3·70
		Rámnagar	6,830	3rd	5,453	1 11 10	...	...	8	95	8	95	11 14 0	13 14 6	1·17
		Total	52,062	...	64,327	4 6 0	...	...	180	2,815	180	2,815	15 10 3	54 1 1	3·45
	SIALKOT.	Siálkot	33,850	2nd	39,995	9 10 5	...	...	242	3,860	242	3,860	15 15 2	114 0 6	7·15
		Daska	5,525	3rd	2,600	14 3 8	...	...	27	370	27	370	13 11 3	66 15 6	4·88
		Pasrúr	8,378	3rd	3,900	12 4 7	...	...	27	480	27	480	17 12 5	57 4 8	3·22
		Siálkot Cantonment	11,912	2nd	10,998	18 2 11	2	250	118	1,750	120	2,000	16 10 8	167 14 4	10·07
		Total	59,665	...	57,493	11 10 9	2	250	414	6,460	416	6,710	16 2 0	112 7 5	6·97
		TOTAL RAWALPINDI DIVISION ...	3,32,178	...	3,52,261	6 14 4	13	2,050	1,477	22,255	1,490	24,305	16 5 0	73 2 8	4·48
DERAJAT.	MUZAFFARGARH.	...	...	...	...	...	...	...	...	...	...	...	...	...	...

FORM B.—*concluded.*

STATEMENT SHOWING TAXATION IN TOWNS HAVING A POPULATION OF 5,000 AND UPWARDS—(*see Census Table*)—*concluded.*

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
							Fees Charged.								
							Class I.		*Class II.*		*Total.*				
Division.	District.	Name of Town.	Total population.	Class of municipality, if a municipal town.	Income of municipality, if a municipal town.	Percentage borne by license tax assessment to income of municipal town.	No. of licenses.	Amount of fees.	No. of licenses.	Amount of fees.	No. of licenses.	Amount of fees.	Average fee for each license.	Incidence of taxation per 1,000 of population.	No. of persons taxed per 1,000 of population.
					Rs.	Rs. A. P.		Rs.		Rs.		Rs.	Rs. A. P.	Rs. A. P.	
DERAJAT—*concluded.*	DERA GHAZI KHAN.	Dera Gházi Khan	22,309	2nd	27,827	7 1 7	1	200	145	1,775	146	1,975	13 8 0	88 8 0	6·54
		Dájal	5,952	3rd	4,007	16 13 6	...	...	54	675	54	675	12 8 0	113 6 6	9·07
		Total	28,261	...	31,834	8 5 2	1	200	199	2,450	200	2,650	13 4 0	93 12 3	7·07
	DERA ISMAIL KHAN.	Dera Ismail Khan...	22,164	2nd	32,577	6 6 11	...	...	138	2,095	138	2,095	15 2 11	94 8 4	6·22
		Kuláchi	7,834	3rd	5,255	17 5 1	2	200	46	710	48	910	18 15 4	116 2 7	6·12
		Leiah	5,899	3rd	4,892	11 13 9	...	...	35	580	35	580	16 9 2	98 5 1	5·93
		Total	35,897	...	42,724	8 6 3	2	200	219	3,385	221	3,585	16 3 7	99 13 11	6·15
	BANNU.	Edwardesabad	8,960	2nd	15,863	8 11 8	...	...	82	1,385	82	1,385	17 14 9	154 9 3	9·15
		Isakhel	6,692	3rd	3,407	12 8 11	...	...	20	430	20	430	21 8 0	64 7 8	2·98
		Kálábágh	6,056	3rd	4,847	8 4 0	...	...	16	400	16	400	25 0 0	66 0 10	2·64
		Total	21,708	...	24,117	9 2 11	...	...	118	2,215	118	2,215	18 12 4	102 0 6	5·43
		Total Derajat Division ...	85,866	...	98,675	8 9 0	3	400	536	8,050	539	8,450	15 10 10	9 15 2	6·27

PESHAWAR.	PESHAWAR.	Pesháwar City	59,292	2nd	1,57,760	5 4 8	12	2,450	406	5,905	418	8,355	19 15 9	140 14 7	7·04
		Do. Cantonment	20,690	3rd	6,862	9 14 6	...	...	47	680	47	680	14 7 5	32 13 9	2·27
		Nowshera Cantonment	5,473	...	...	...	...	...	23	230	23	230	10 0 0	42 0 1	4·20
		Tangi	9,037	...	...	...	...	...	16	160	16	160	10 0 0	17 10 11	1·77
		Mairá Paráng	8,874	...	...	...	...	...	2	20	2	20	10 0 0	2 4 0	0·22
		Charsádda	8,363	...	...	...	...	...	26	290	26	290	11 2 5	34 10 9	3·10
		Nowshera	7,490	...	...	...	...	...	19	260	19	260	13 10 11	34 11 4	2·53
		Total	1,19,219	...	1,64,622	6 1 2	12	2,450	539	7,545	551	9,995	18 2 3	83 13 5	4·62
	HAZARA.	Baffa	5,410	3rd	2,533	3 8 10	...	...	9	90	9	90	10 0 0	16 10 2	1·66
		Total	5,410	...	2,533	3 8 10	...	...	9	90	9	90	10 0 0	16 10 2	1·66
	KOHAT.	Kohát	18,179	3rd	13,606	6 14 7	...	...	63	940	63	940	14 14 8	52 3 6	3·46
		Total	18,179	...	13,606	6 14 7	...	...	63	940	63	940	14 14 8	52 3 6	3·46
		TOTAL PESHAWAR DIVISION ...	1,42,808	...	1,80,761	6 1 7	12	2,450	611	8,575	623	11,025	17 11 2	77 3 2	4·37
		TOTAL FOR PROVINCE ...	20,75,769	...	24,34,170	8 7 11	253	41,100	10,251	1,65,791	10,504	2,06,891	19 11 2	99 10 9	5·06

FORM C.

STATEMENT SHOWING TAXATION IN VILLAGES, INCLUDING ALL TOWNS, WHOSE POPULATION IS LESS THAN 5,000.

1	2	3	4	5	6	7	8	9	10	11	12	13
Division.	District.	No. of villages.	Total population.	Fees Charged.						Average fee for each license.	Incidence of taxation per 1,000 of population.	No. of persons taxed per 1,000 of population.
				Class I.		*Class II.*		*Total.*				
				No. of licenses.	Amount of fees.	No. of licenses.	Amount of fees.	No. of licenses.	Amount of fees.			
					Rs.		Rs.		Rs.	Rs. A. P.	Rs. A. P.	
DELHI.	Delhi	200	2,65,147	7	800	854	14,845	861	15,645	18 2 8	59 0 0	3·24
	Gurgaon	136	1,99,872	2	300	410	5,405	412	5,705	13 13 6	28 8 7	2·06
	Rohtak	167	3,07,649	4	500	629	9,225	633	9,725	15 5 9	31 9 9	2·05
	Hissar	170	2,04,606	1	200	414	5,590	415	5,790	13 15 3	28 4 9	2·03
	Karnál	234	2,77,073	...	...	632	7,570	632	7,570	11 13 2	27 5 2	2·28
	Umballa	242	3,15,585	12	1,700	975	16,955	987	18,655	18 14 5	59 1 10	3·12
	Simla	5	14,137	2	300	106	1,575	108	1,875	17 5 10	132 10 1	7·64
	Total	1,154	15,84,069	28	3,800	4,020	61,165	4,048	64,965	16 0 9	41 0 2	2·55
JULLUNDUR.	Ludhiána	187	2,17,056	...	...	530	7,085	530	7,085	13 5 11	32 10 3	2·44
	Ferozepore	204	2,05,176	2	200	445	6,065	447	6,265	14 0 3	33 8 7	2·17
	Jullundur	182	2,42,969	1	150	588	9,035	589	9,185	15 9 6	37 12 10	2·42
	Hoshiárpur	364	2,32,414	8	1,100	744	10,065	752	11,165	14 13 7	48 0 7	3·23
	Kángra	190	3,54,662	2	250	470	6,060	472	6,310	13 5 11	17 14 1	1·33
	Total	1,127	12,52,277	13	1,700	2,777	38,310	2,790	40,010	14 5 6	31 15 2	2·22
LAHORE.	Gurdáspur	246	2,26,000	9	1,350	653	10,220	662	11,570	17 7 7	51 3 1	2·92
	Amritsar	214	2,36,105	2	200	461	6,485	463	6,685	14 7 0	28 5 0	1·95
	Lahore	324	3,26,732	4	450	676	8,860	680	9,310	13 11 1	28 7 10	2·08
	Jhang	249	1,96,721	6	600	735	10,825	741	11,425	15 6 8	58 1 3	3·77
	Montgomery	229	55,805	1	200	578	7,980	579	8,180	14 2 1	146 9 4	10·37
	Mooltan	290	2,96,299	6	700	839	12,435	845	13,135	15 8 8	44 5 3	2·85
	Total	1,552	13,37,662	28	3,500	3,942	56,805	3,970	60,305	15 3 1	45 1 4	2·96

RAWALPINDI.	Ráwalpindi	160	2,00,252	7	1,100	783	11,115	790	12,215	15 7 5	60 15 11	3·94
	Jhelum	155	1,97,365	1	200	495	6,565	496	6,765	13 10 2	34 4 5	2·51
	Gujrat	236	2,24,186	...	...	578	7,600	578	7,600	13 2 5	33 14 4	2·57
	Shahpur	128	1,46,060	2	200	381	4,935	383	5,135	13 6 6	35 2 6	2·62
	Gujránwála	175	1,97,319	1	100	451	6,335	452	6,435	14 3 9	32 9 9	2·29
	Siálkot	417	3,90,040	12	1,300	1,160	17,030	1,172	18,330	15 10 2	46 15 11	3·00
	Total	1,271	13,55,222	23	2,900	3,848	53,580	3,871	56,480	14 9 6	41 10 9	2·85
DERAJAT.	Muzaffargarh	191	1,75,788	1	100	795	10,985	796	11,085	13 14 9	63 0 11	4·47
	Dera Gházi Khan	125	1,30,444	1	100	478	5,620	479	5,720	11 15 0	43 14 0	3·67
	Dera Ismail Khan	156	1,91,236	...	...	495	7,055	495	7,055	14 4 0	36 14 3	2·58
	Bannu	46	98,884	...	...	85	1,045	85	1,045	12 4 8	10 9 1	0·75
	Total	518	5,96,352	2	200	1,853	24,705	1,855	24,905	13 6 9	41 12 2	3·11
PESHAWAR.	Pesháwar	95	1,72,598	...	...	417	4,585	417	4,585	11 0 0	26 9 0	2·41
	Hazára	56	90,717	...	...	208	2,555	208	2,555	12 4 6	28 2 8	2·29
	Kohát	16	14,462	...	...	22	235	22	235	10 10 10	16 4 0	1·52
	Total	167	2,77,777	...	...	647	7,375	647	7,375	11 6 4	26 8 10	2·33
	GRAND TOTAL	5,789	64,03,359	94	12,100	17,087	2,41,940	17,181	2,54,040	14 12 7	39 10 9	2·68

MONOGRAPH

ON

WOOLLEN MANUFACTURES

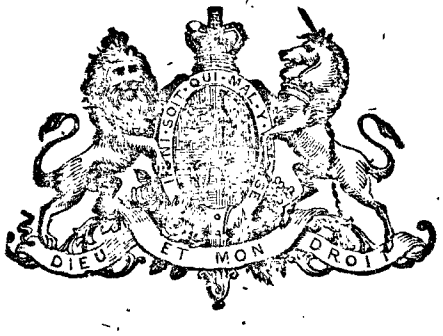
OF THE

PUNJAB

IN

1884-85.

Published by Authority.



Lahore:
PUNJAB GOVERNMENT PRESS,
1886.

No. 627, dated Lahore, 6th September 1886.

From—W. R. LAWRENCE, Esquire, Under-Secretary to Government, Punjab, Revenue Dept.,

To—The Junior Secretary to Financial Commissioner, Punjab.

I AM directed to acknowledge the receipt of your letter No. 485 of the 25th of May last, forwarding a monograph on the Woollen Manufactures of the Punjab which has been prepared under the orders of the Financial Commissioner by Mr. D. C. Johnstone, Assistant Commissioner, in charge of the Kulu Sub-division.

2. The report has been read with interest, and reflects credit on Mr. Johnstone. As suggested in paragraph 5 of your letter under reply the samples of raw and manufactured wool should be deposited in the Lahore Museum, and they are accordingly returned for that purpose.

Punjab Government Press, Lahore—29-9-86—550.

LIST OF ERRATA.

Page 2, line 14, for "*laticandatus*" read "*laticaudatus.*"
Page 4, line 36, insert a comma after "*shăna.*"
Page 5, line 22, for "band" read "hand."
„ line 23, for "dherná" read "*dherná.*"
„ line 58, for "*taná*" read "*táná.*"
Page 6, line 58, for "in any district average" read "in any average district."
Page 7, line 4, for "them" read "then."
„ line 35, for "*namda*" read "*namdas.*"
„ last line, for "puwards" read "upwards."
Page 8, line 47, for "*ássans*" read "*ásans.*"
Page 10, line 46, } for "túrquois" read "turquoise."
„ line 61, }
Page 11, line 44, insert comma after "*milsee.*"
Page 12, line 9, for "indispensible" read "indispensable."

No. 485.

(No. 3588.)

FINANCIAL COMMISSIONER'S OFFICE,

Dated LAHORE, *the 25th May* 1886.

FROM

R. E. YOUNGHUSBAND, ESQUIRE,

Junior Secretary to Financial Commissioner, Punjab,

To

C. L. TUPPER, ESQUIRE,

Junior Secretary to Government, Punjab.

SIR,

In continuation of the letter of this office, No. 1066, dated the 19th September 1884, I am directed by the Financial Commissioner to forward a Monograph on the Woollen Manufactures of the Province.

Colonel W. G. Davies, C.S.I.

2. As the adequate treatment of the subject required some special knowledge, the Financial Commissioner requested Mr. D. C. Johnstone, Assistant Commissioner, in charge of the Kulu Sub-division, who, it was believed, had studied it, to undertake the task of preparing the monograph. This he readily consented to do, and Colonel Davies wishes to express his obligations to Mr. Johnstone for the excellent report which he has written at a very short notice. His treatment of the subject in its technical aspect is especially good.

3. The manufacture of carpets has not been described in any of the district reports received or in Mr. Johnstone's monograph. An account is given in Mr. Baden Powell's Punjab Manufactures, Class VI, Division I. Excepting in Jails, this manufacture is, it is believed, confined to a few places in the districts of Mooltan, Lahore, and Amritsar. The well known Biloch rugs are nearly all made beyond the frontier.

4. Of the district reports received in this office, the best were those of Mr. Johnstone, Assistant Commissioner, Kulu; Mr. Fenton, Assistant Commissioner, Kángra; Mr. Wakefield, Deputy Commissioner, Ludhiána; Mr. Ogilvie, Deputy Commissioner, Hissár; Mr. Brown, Officiating Deputy Commissioner, Muzaffargarh; and Narain Das, Extra Assistant Commissioner, Gujránwála. No reports were received from Rohtak and Montgomery, and those sent in by the Deputy Commissioners of Dera Ismail Khan and Bannu were meagre and disappointing.

5. Samples of raw and manufactured wool have been sent from each district. A selection accompanies this letter. The Financial Commissioner proposes to deposit the whole collection in the Lahore museum.

I have, &c.,

R. E. YOUNGHUSBAND,

Junior Secretary to Finl. Commr., Punjab.

Monograph on Woollen Manufactures of the Punjab in 1884-85.

1. The quantity and value of the woollen manufactures of this Province, though not insignificant, cannot for a moment be compared to the outturn of cotton goods: where in the one case the figures are units, in the other case they are tens. But, though this is so, when the figures for the whole province are taken, there are, on the other hand, a few districts in which the manufacture of woollens is a really important industry.

Raw materials.

2. The raw materials to be considered are four in number—sheep's wool, pashm, or the wool of the Thibetan shawl goat, goat's hair, and camel's hair; but it need hardly be remarked that the last two are not wool properly so-called. *All* wool has, in consequence of its structure, more or less of the property of felting, while goat's hair and camel's hair, having a different structure, are *never* found to possess this property.

Estimated outturn.

3. The quantity of these materials produced in the Punjab *per annum* can only be given very approximately, as some district reports contain no information on this point. But if for these districts a judicious conjectural addition be made for local outturn based on the relative size, situation and climate of each, the following figures are arrived at:—

	Sheep's wool.	Pashm.
	In Maunds.	*In Maunds.*
1. Produce of *Province*	63,000	*Nil.*
2. Imported by Sea	1,900	4,500
3. Imported from Afghánistán, &c., by land for use in Province	7,500	1,500
4. Imported from Kashmír, Ladákh, Chinese Tibet, &c., for use in Province ...	3,000	1,500
5. Imported from Bikanír, Baháwalpur, Rajpút States, &c., for use in Province ...	2,000	*Nil.*
Total	95,400	7,500
Deduct export of local produce	13,000	*Nil.*
Balance worked up in Province	82,400	7,500

Pashm is not grown within the Province at all, except to an inconsiderable amount in Spiti.

Wool-growing tracts.

4. As wool-growing tracts the important districts are Hissár, with 1,550 maunds; Fírozpúr, with 2,800 maunds; Lahore, with a local produce of over 4,000 maunds; Jhang, with about 3,600 maunds; Shahpur, with 8,000 maunds; Pesháwar nearly 3,000 maunds; Dera Ismail Khan, with 11,700 maunds; Amritsar, with 2,000 maunds; Mooltan with 2,714 maunds; Ráwalpindi and Jhelum, with from 2,300 to 2,700 each. Of the wool of the plains that of the *Bar* country is deemed better than that of the *Thal*; but the plains wool is on the whole miserably poor, with the exception of that produced in the south-eastern part of the province. In the above figures Hissár is mentioned not so much for quantity as for quality.

Varieties of staples.

5. Of this product there are several different colours: in the plains black seems to be almost as common as white; and in the hills, and especially in Kángra and Kulu, sheep may be black, or white, or blueish-brown, or reddish-brown, or grey; while the staple varies in length from two inches in common breeds to six or even more in the case of certain hill breeds. Probably the softest and finest wool in the hills is the Lahauli wool, of four to five inches in length; but even this is said by the Manager of the Egerton Woollen Mills to be inferior to Australian wool. The long hill wool, however, takes dye badly.

Districts in which goat's hair is chiefly produced.

6. In the production of goat's hair the Mooltan district is pre-eminent with the large figure of 1,403 maunds; and then come Shahpur with 1,100, and Gujrat with 600 maunds. Dera Gházi Khan is said to have an outturn of 1,820 maunds of goat's and camel's hair together, but no details are given. The total for the province is about 9,000 maunds, and the import small.

Districts where camel's hair is produced.

7. Camels seem to be sheared chiefly in Shahpur and Hissár and Dera Gházi Khan. The total produce of the province is not more than 2,400 maunds and import is small.

Imports of wool by sea.

8. The wool imported by sea for use in the Punjab is mainly Australian, and goes chiefly to the Egerton Woollen Mills; that imported from Afghánistán comes chiefly into Dera Ismail Khan and Dera Gházi Khan. Figures are not available, but most of this import is of the wool of the *dumba* (*ovis laticandatus*). That from Kashmír territory, Tibet and Central Asia, generally passes through Sirinagar, or through Kulu and Kángra, and is used chiefly in Amritsar, Lahore, and Ludhiána, while a considerable amount has till lately been exported to Europe, a trade which has since the year under report suffered a severe check owing to the fall in prices in the London market. The wool imported from Bikanír and Baháwalpur finds its way chiefly to the river port of Fázilka, and the Bikanír article, which is remarkably fine, is taken to Karáchi for export to Europe. In fact, comparatively little of the wool, approaching to two lakhs of maunds, that went fromor through the Punjab to Karáchi and Bombay, is Punjab wool: the mass of it being Rajputána wool (going *viâ* Rewári and Fázilka and Mooltan), Himálayan, trans-Himálayan and Bikaníri.

Imports of pashm.

9. The pashm imported comes from Persia by sea, from Bokhara, &c., *viâ* Kabul (known as *Kábuli*,) from Kashmír, and from Tibet and Ladákh and countries beyond. The first mentioned, which is known as *Kirmáni* and is not so much esteemed as the others, finds its way to Amritsar and Lahore; the second to Lahore and Amritsar; the third, a small part of which is the product of the Kashmíri camel, to Ráwalpindi, Gujrát, Lahore and Amritsar; and the last to Nurpur in the Kángra district, to Amritsar, Ludhiána and Lahore. Of the *pashm* imported *viâ* Kábul a small quantity is the product of the goat of Turfán which grows only pashm and no hair.

Wahâb Shâhi pashm.

10. In Amritsar, Nurpur, Ludhiána, and Lahore, a product called *Wahab Shâhi pashm* is used. It comes from Persia and is passed off as pashm, being used by itself or mixed with real *pashm*. This is really only fine sheep's wool and not *pashm* at all. Most, too, of the stuff that goes to the Punjab *viâ* Simla from Rámpur is not pashm though sold as such.

Wool locally produced, how utilized.

11. It remains, with reference to this part of the subject, to give some idea of what becomes of the locally produced wool. Mooltan, Muzaffargarh, Jhang, Montgomery, Dera Ismail Khan, Gujránwála and Shahpur export, through the first-named district towards Karáchi, as a rule, something like 10,000 maunds of locally produced wool; but since the year under report all export has received a severe check, as stated above. Some of the wool of Rewári goes to Cawnpore and Meerut. And here we have stated the only considerable exports of Punjab-grown wool. It is not, however, the case that all the other districts keep their own wool for manufacture. Thus, while Ráwalpindi, Hoshiárpur, Jullundur, Hazára, Pesháwar, Kohát and Bannu seem, except occasionally in small quantities, neither to import raw wool nor to export the locally grown article; Lahore, on the other hand, gets locally grown wool from Fírozpúr, Gujrát, Gujránwála, and Siálkot; Ludhiána from Sirsa and Fírozpúr, and Amritsar from the districts to the north and from the hilly tracts of Kángra and Kulu.

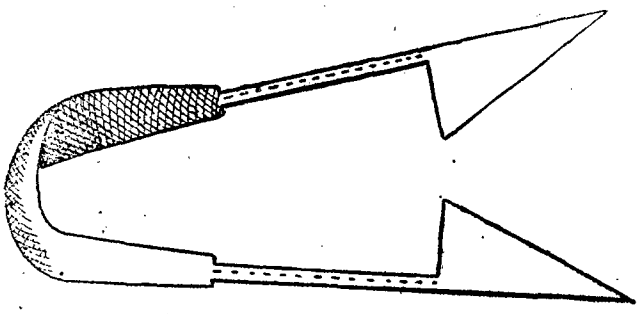
Breeding.

12. Except in Sirsa it does not appear that any efforts are made to improve stock, and even there the only step taken is the castration of all but the finer rams: a good step, but one that should be supplemented by judicious introduction of fresh strains of blood.

Shearing.

13. Shearing is done twice a year, in spring and autumn, except in Hissár, Kángra and Kulu, where there is an intermediate shearing in June; and the usual wage is one-twentieth of the wool shorn.

A man can shear 20 unwashed or 25 washed sheep *per diem*. In most districts the sheep are washed before shearing, but generally with cold water and in a superficial way; but only in the case of the fine sheep of the Mansehra tahsíl of the Abbottabad district is it stated that the want of washing before shearing is detrimental. Shearing is done with scissors 8 inches or more in length, and in some places with shears, whereof a rough sketch is given in the margin, taken from the Muzaffargarh report.



Weight of fleeces.

14. The weight of a fleece varies from three chittaks, in the case of the inferior plains sheep, to one seer in Kángra hill-sheep. As these Kángra sheep are shorn three times, it may be taken that three seers is the very largest annual yield from any sheep in the province. Excluding Kángra and Kulu sheep, the annual yield cannot exceed one seer *per* sheep, and the quality also is inferior, while average English sheep certainly give as much as five pounds and some breeds give seven and even eight pounds, a comparison which is eloquent of the poverty of the ordinary Punjab breeds.

It is only here and there that fleeces of dead sheep are used. They are plucked out and not shorn.

Clipping—(*a*) of goats. (*b*) of camels.

15. The clipping of goats is done once a year in nearly every district, and the yield is about half a seer at a clipping. Camels are clipped once a year. The yield at each clipping is one to two pounds for a male and two to four for a female, the cause of the difference being that the back and shoulders of the male camel are never clipped.

Selling price.—(1) of wool.

16. Each sheep's fleece when cut is made up into a bundle, and in this state sells at an average rate of $2\frac{1}{2}$ seers per rupee.

(2) of goat's hair.

The average price of goat's hair is about 13 seers per rupee; and of camel's hair 5 seers.

(3) of pashm.

The *pashm* imported is worth one rupee and eight annas a seer on an average and *Wahábi Shábi pashm* (so-called) about 12 annas a seer.

Further processes for sheep's wool up to spinning.

17. At this stage it is necessary to divide the subject and to consider the further processes for the different materials separately. All the processes to be described now are not universally employed. The processes are sorting, washing, picking out foreign bodies by hand, teasing out matted portions by hand, carding or scutching with the bowstring, and combing.

Sorting.

18. Wool sorting in the Punjab is done in a very primitive style, and indeed in some parts it is not done at all. Where done only two qualities are recognised, the better wool and the worse wool.

Washing.

19. Washing of the wool is not common, nor is it very necessary except for wool loaded with sticky matter Unless done carefully and with suitable soap it is very bad for the wool; and picking by hand or some other process is, in any case, still necessary for the removal of burrs, thorns, seeds, &c., entangled in the fibres.

Hand-picking.

20. Picking out of foreign bodies by hand is done everywhere. It is a very tedious process in the case of wool grown in tracts abounding in thorny bushes and undergrowth; but none of the other processes avail to remove burrs. The ordinary wages for this and the next process (teasing by hand) are certainly not more than one anna a day, the workers being nearly always women.

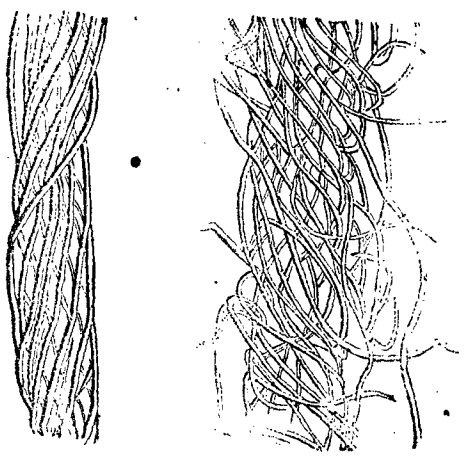
The mere process of hand-picking involves a certain amount of teasing out of matted portions of wool; but where scutching and combing are uncommon, a state of affairs which appears to exist in the Jhang district and in Jullundur and Ludhiána, something more than this must be done; the wool must by hand be reduced to a homogeneous mass of fluff.

But to effect this purpose in most districts either the *pínjan* (bowstring) or the comb is used.

Scutching or carding.

21. The *pínjan* has been described in the Monograph on Cotton. A bow is suspended, string downwards, at such a height that the string passes through the wool to be operated on. The string is then made to vibrate violently either by twitching it or by striking it with a hammer, and the vibrating string catches up and scatters the wool about. Besides the opening out of the separate fibres, dust and all dirt, not viscous and not prickly, are shaken out. The instrument is used in nearly every district of the Punjab; and nearly everywhere the work is done by men of some low caste. In most places there is a separate caste of *pínjas*; but it is also true that in many districts there is no such special caste. The wages vary from half an anna to 1 anna per seer scutched, which certainly does not give more than two annas per diem. The scutcher is generally a man, but in one or two of the south-eastern districts women scutch for themselves with a small *pínjan*.

Combing.



Worsted. Woollen.

22. It must not be supposed that the bowstring and the comb are merely alternative instruments for effecting the same purpose. The former opens out the wool and loosens its mass, but leaves the fibres lying confusedly in all directions; while the latter tends to open out the wool and also to lay fibres side by side in parallel lines. The former is used when woollen thread is wanted, the latter when the spinning of worsted is our object. The magnified sketch in the margin of typical woollen and worsted threads makes this quite clear.

Combs.

23. The combs used in the Punjab are of two sorts, single and double. The double are reported to be used only in Gujránwála, Amritsar and Lahore; and the single comb is found in Siálkot and Fírozpúr.

The double comb (*shána kanga*), which is the more effective of the two, consists of a piece of wood, laid on the ground, with two parallel rows of vertical iron teeth standing on it, there being 20 teeth about 4 inches high and the intervals between the two rows and between the teeth being 1 inch and ½ an inch respectively. The teeth are rigidly fixed to the platform which is kept steady by the operator's feet; and he does the combing by taking a flock of wool, striking it upon the teeth and drawing it gently downwards through the teeth at right angles to the rows. Before combing the wool is teased in the fingers, and sometimes, though not often, is scutched. It will now be clear that combing is an addition to, and is by no means a substitute for, the mutually similar processes of teasing and scutching. The single comb is a very primitive instrument and has very imperfect effects. In its rudest form it is a mere *panja* or claw which cleans rather than combs, though it does comb to some degree. The wages of a comber who combs out 4 seers *per diem* do not exceed 2 annas. Neither the single nor the double instrument is used for combing short-staple wool, nor could it be employed to any effect for such a purpose. The people do not seem to have discovered how much easier a comb is to work with when heated than when cold.

Wool when cleaned and prepared, made into balls.

24. The wool when teased or scutched or combed, as the case may be, is made up into balls (*punís*) and the next operation is spinning.

Spinning.—The Charkhí.

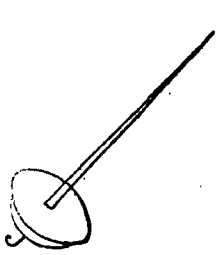
25. The *charkhí*, with which wool as well as cotton-spinning is usually done, has been described in the Cotton Monograph as follows: "It is formed of two parallel discs, the circumferences of which are connected by threads, and over the drum so formed passes a driving band also made of thread, which communicates a rapid motion to the axis of the

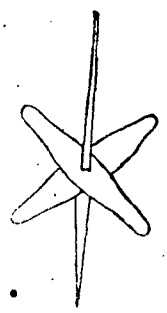
spindle. The end of a "puni" is presented to the point of the spindle, which seizes the fibre and spins a thread, the "puni" being drawn away as the thread forms, as far as the spinner's arm will reach. Then the thread is slackened and allowed to coil itself on the body of the spindle until the spindle is full, when it is removed."

The process is the same for wool, and a spindlefull of woollen or worsted thread is called *challi* or *mudha*.

The Dherná or Taklí.

26. But in some parts, notably Kulu, the *charkhí* is quite unknown and the instrument used is the *dherná* or *taklí*, the drawings of various forms of which in the margin makes verbal description unnecessary. In Simla and a few other places both charkhí and taklí are used for woollen spinning. A portion of a "puni" is drawn out and held to the upper point of the instrument, and wound round it. The *dherná* is then spun round in the hand, and when it has got firm hold of the wool, it is allowed to hang in the air suspended by the thread it is spinning, the right hand of the operator keeping up the rotary motion, while the left hand regulates the draft of the wool. When the thread is getting so long as to put the dherná out of reach or to let it touch the ground, the draft of wool from the *puni* is stopped and the piece that has been spun is wound on the *dherná*. The *charkhí* is said to produce a more even and reliable thread than the *dherná*; and this can be readily understood to arise from the superior regularity of the rotary motion in the former machine.





Spinning, by whom done.

27. In the hills spinning is done by all classes, both sexes, and all ages from ten years and upwards. In Kulu, for instance, every tenth person one meets on the road is spinning wool with a *taklí* as he or she walks along; and it is no doubt the portability of the instrument as much as anything else that causes it to be used instead of the *charkhí*. In the plains, while women of all the poorer classes spin wool in their leisure moments for blankets, &c., to be made for the household, we do find here and there classes of persons who do spinning regularly for pay. Their wages are miserably low, as a comparison of the prices of scutched wool and of yarn will show. To take the figures for the Kángra district, scutched wool of the quality that sells at seven annas a seer produces yarn that sells at nine annas a seer; and the spinning of a seer certainly occupies three days. In Karnál and some other districts the wages are as low as one to one and a half annas per seer.

Twisting.

28. When yarn has been spun it is generally found that it is too thin at places to bear the strain of weaving, or a coarse thick fabric is wanted. The yarn has therefore to be doubled or trebled, and sometimes more than three folds are given. For twisting, as this process is called, the *charkhí* can be used and also a form (called *masán*) of the *dherná* or *taklí*; the difference being that the upper end of the spindle has a narrow, curved groove about half an inch long running from the point along and round the rod, and in this groove the threads twisted together are run

Import of European yarn.

29. The import of European yarn is not very considerable. In the Lahore district it amounts to 500 maunds at least; but in other districts, judging by the reports sent in, it is used mainly in jails in small quantities. It is never used except for fine fabrics; or for knitting.

Warp-laying.

30. Yarn, single or double, is sold in balls (in the hills) or on reels of various shapes; but before weaving it must be wound on reels (*úrás*) and the warp (*taná, air*) prepared. *Mutatis mutandis*, the description given by Mr. Francis for cotton applies to wool, and I therefore quote his account here for easy reference. "Two reels are fixed at the ends of sticks on a pivot on which they can revolve. A double row of sticks or reels is then planted in the ground at intervals of about two

yards, extending either in a straight line or in a loop, to the length which the piece of cloth is to have. The warp-layer then takes a stick and reel in each hand, and walks along the line, dropping the threads one inside and the other outside the upright sticks alternately, so that the two cross each other between each pair. Having got to the end of the line, she returns in the same way, and so on, up and down, until enough threads have been laid to make the required width of the fabric. If the cloth is to have a longitudinal stripe or a check, reels of different colours must be used, and the proper number of threads must be laid with each colour."

Sizing.

31. When the warp has been laid, it is removed from the sticks for sizing, which is done by immersing it in a starch of wheat flour and then stretching it between trestles to dry, the superficial residue of the starch being brushed off when dry by a brush of *khas khas* grass. Sizing is reported as being resorted to only in order to strengthen the threads ; but I doubt if it really strengthens them much and its most important object is to keep the threads separate. " Pán " and hemp water are also used for sizing. In some parts sizing is not done at all, *e.g.*, in Kulu and Hazára.

Weaving.

32. The stuff is now ready for the weaver. The following description of the loom given in the Monograph on Cotton applies to the woollen loom and is therefore quoted (with omissions) :—

" The loom is in its essentials much the same as the hand-looms used in other countries. The weaver works sitting with his feet in a hole in the ground with the warp which is to be filled up extending horizontally from in front of him to a peg fixed in the ground same yards off. As the cloth is made, it is wound up on a roller at the near end, the farther end being slackened at the same time by letting go a rope which runs round the farther peg and returns to within the workman's reach. The warp is controlled by means of heddles (*rach*), of which for plain weaving there is one pair. The heddles consist of vertical frames of the width of the loom, each of them carrying half as many loops, made of thread, as there are strands in the warp. Strands Nos. 1, 3, 5, &c., are rove through the loops of the one heddle, and pass loosely through open spaces in the other one, while strands Nos. 2, 4, 6, &c., are carried through the loops of the second heddle and through the open spaces of the first one. The lowering of one heddle thus pulls down all the threads in the odd places without affecting the remainder, while the lowering of the other has the same effect on the threads in the even places. The heddles are suspended from the roof, and are worked by treddles on which the weaver places his feet. The yarn for the woof or weft (*bána*) is wound on small hollow spools. The shuttle is shaped like a small boat pointed at each end, and having the intermediate space open In this space the spool of yarn is placed, and revolves on a wire which runs through it lengthwise. The end of the yarn passes out through a hole in the side of the shuttle. One of the heddles being depressed, the shuttle is thrown from one side to the other of the warp, passing over one set of strands and under the other, and the yarn which it leaves behind it forms one thread of the woof. The position of the heddles is then reversed and the shuttle is thrown back, passing this time (in plain weaving) over those threads of the warp which it before passed under and *vice versâ*. The threads of the woof are pressed home by a heavy comb (*kanghi*), which, like the heddles, is suspended from the roof."

The only points needing further remark are that the woollen loom is said to be stronger and more roughly made than the cotton loom, and that the labour of fitting the warps into the heddles every time a new piece is to be woven is in some districts avoided by the following device. When one piece of cloth is finished and removed, a length of some five or six inches of yarn is left hanging in each loop of the heddles and the warp threads of the next piece to be made are attached to these lengths.

Weaver's wages.

33. In Kángra the weaver gets three to four annas for a day's work. It may be doubted whether there is in any district average steady work for the weaver at this rate. Weavers are in most places a distinct caste (*Juláha*), but it is said that in Hissár *chamárs* and *dhaneks* also weave wool.

34. The cloth after weaving is rough and threadbare in appearance and it has now to be felted. This is done by immersing it in water in which has been made a lather of soap or *ritha* (*sapindus detergens*), and kneading the cloth with the hands or feet. If the cloth is then pegged out to dry, shrinking is avoided: if not pegged out, it shrinks considerably. Whether pegged out or not, the surface becames uniform and the separate threads are either not distinguishable at all or very little so. If the cloth has been made out of real worsted yarn no felting is attempted: such yarn is used when cloth like serge is made in which the threads are to remain visible; but such cloths of country make are uncommon. In all cases, too, washing after weaving has to be done to clean the cloth.

Felting after weaving.

35. Finally, in some districts and specially in Kulu, a stiff brush (*thákárú*) is used to raise the nap. The bristles are made of small slivers of cane, which serve the purpose fairly well but are inferior in the requisite horny elasticity to the teazle (*dipsacus fullorum*), a plant that has been grown with success by a settler in Kulu and which could easily be grown anywhere in the Himálayas at moderate altitudes.

Process adopted in Kulu for raising the nap.

36. For articles made out of unspun wool the general name is *namda* or felt, and they are used for bed and floor rugs, for horse cloths, for lining ice boxes, and for other purposes.

Namdas.

Though the details of manufacture differ, the principle is everywhere the same. The wool is scutched or hand-teased and washed. A layer of it is then spread out over a mat that can be rolled up like a door-chick. The thickness of the layer depends on the thickness of the *namda* wanted, and to produce a good article the thickness must be uniform. Then water is sprinkled well over the wool and the mat is carefully rolled up and subjected to pressure by the feet or hands and kneaded for a period varying from one to three hours. In some cases this finishes the process; but sometimes the mat is opened and the *namda* turned upside down and the process repeated. In very many districts, too, mere sprinkling of water is not deemed sufficient: the natural felting property of the wool being small, the wool has to be soaked in a solution of soap, which, drying causes its fibres mutually to adhere; and in one district, *viz.*, Dehli, a mixture of chalk and gum has to be added. It is clear that the best *namda* must be those which are made from wool which felts merely with water, and that the use of any viscous substance to produce this effect is a sign that the wool is not really fit for namda-making. It stands to reason that a *namda* depending for its compactness on any substance soluble in water is at the mercy of the first heavy shower of rain or of the first more than momentary immersion in water. *Ritha* lather, used in some places, is not objectionable, as it assists real felting and is not sticky.

37. *Namdas* are made of a single colour and also in patterns some of which are very pretty. As a *namda* is never intended to be washed, the dyes used in the pattern are seldom fast; for the use of a fixing ingredient would be an unnecessary expenditure. To make a *namda* with pattern the pattern is first laid out on the mat and the ground-work wool is spread over it; or the ground-work is spread out first. The patterns are sometimes geometrical, but sometimes contain conventional art foliage and flowers. In these latter the fundamental rule that where a curve springs from another curve or from a straight line, they should be mutually tangential, is ignored to the ruin of many fine combinations; and it is not unlikely that many other offences against true artistic principles are perpetrated. *Namda* makers are not *Juláhas*, but belong to different castes. In Hazára "telis" do the work. The usual wages are two to three annas *per diem*.

Namdas plain and ornamented.

38. No account has been given here of the weaving of carpets. They are made chiefly in jails and their process of manufacture is known to me only from Mr. Baden Powell's description. Woollen carpets are made also in the Kasúr tahsíl of Lahore, in Amritsar, and in a few other places. In the Kohát, and to a small extent in the Bannú, district a carpet or rug called *nakhai* is made. In weaving this, after a weft thread is put in, the portion between each pair of consecutive warp threads is pulled upwards an inch and so left. These loops are not cut when the rug is finished

Carpets.

so that the nap consists of a mass of loops. Small rugs used as seats and called *ásans* are made in Shahpur, Ludhiána, Lahore, Hoshiárpur, and other districts; but I can find in the reports no special information concerning their manufacture, except that the patterns used are line and stripe patterns. In carpet-making a shuttle is not used, but a stick, which is worked through the warp-threads and has the woof thread attached to it. The warp is generally upright and not horizontal.

Blankets.

39. The *lois* of Sirsa and Fattahabad in the Hissár district and of Ludhiána are fine in texture and warm, while those of most of the Punjab districts have no special excellence.

A description of the blankets (*i.e.*, *lois*, *pattú*, *kammals*, *bhuras*, &c.,) of the province would occupy much space if it went into details. In point of intrinsic excellence we find the pattú of Waziri-Rupi, in Kulu, pre-eminent. In texture, in lightness, in warmth, and in simple artistic beauty, these blankets are very remarkable, and no mere description of the patterns could convey any adequate idea of them. And between these blankets and the wretched loosely-woven coarse *kammal* of the district of Hoshiárpur, there are fabrics of every intermediate degree of quality. Taken generally it may be said that the quality is poor; but it may be doubted whether any Western race, with the like appliances, would produce anything as good.

Description of the different kinds of blankets and woollen piece-goods.

40. There is no essential difference between *loi* and *bhúrá*, and *kammal*. *Lois* seem generally to be made white and *kammals* black (dyed or natural); while *bhúrás* are much the same as *lois*, and the two words may be taken almost to be synonyms. There is also no essential difference between the texture of *alwán* and that of *loi*. *Alwán* is cloth in long pieces for cutting up by the tailor; a *loi* may be of exactly the same make, but it has some sort of edging, *e.g.*, a single coloured line, and is for use as a blanket. In the Hissár district *dhabla* is made, cotton and wool being mixed in the manufacture. A similar manufacture elsewhere is called *garbi* (or *garvi*) *patti*.

Quantity and value of woollen manufactures.

41. I have not been able to make any estimate from the reports sent in of the quantity or value of the total woollen manufacture of the province for the year under report. But in 1880-81 it seems that the total annual outturn was estimated officially at Rs. 12,24,691; and the value has certainly not diminished. But a few reported details may be of interest. The Hissár district exports 18,000 yards of *loi* to Multan and Delhi, and imports 72,000 yards of blankets from Ludhiána and Firozpúr. The local outturn of Amballa is put at 19,713 blankets, with an export of 9,795 to other districts and an import of Rs. 20,000 worth of *lois* from Ludhiána, Amritsar, Nurpur (Kángra) and Kashmír; and that of Ludhiáña at over Rs. 24,000 worth of imitation shawls (half exported to Native States and Amritsar and elsewhere), and about 1½ lakh's worth of other things. Jullundur, with an outturn of 40,000 yards of blankets, nearly half of which is exported, imports 96,000 yards of European cloth and flannel and at least 32,000 yards of country woollens. The hill station of Murree imports Rs. 36,000 worth of European woollens and 10,000 pieces of pattú from Kashmír. Shahpur makes Rs. 30,000 worth of *lois* and blankets and 800 *ásans* and the export of these articles amounts to Rs. 15,000 in value. The people of Delhi and Gurgaon seem to prefer cotton-padded garments to woollen clothes for warmth.

Import of European piece-goods.

42. The import of European woollens is said nowhere to compete very severely with the native industry generally. In Lahore it is thought that the manufacture of country-made medium stuffs is suffering and will suffer, and the same report comes from Hissár. In most other districts it is stated that the import of European goods has little or no effect on native manufactures.

Classes by whom woollens are used.

43. The European woollen fabrics imported are flannel, merino, broadcloth, knitted goods, &c., and are used by Europeans and a few of the wealthier natives. In the plains, while there is one tribe, the Odhs of Muzaffargarh and the Afghán frontier districts, that consider the wearing of woollen garments a religious obligation, and while the Khojahs of Lahore and elsewhere almost invariably wear the woollen bhurá, cotton is much more worn than woollen, in fact, in many districts only woollen blankets for bedding are used and no woollen clothes.

Even in such a district as Kángra cotton is largely worn and its use is becoming more and more common, though the Gaddi (shepherd) still wears nothing but woollen homespun.

Knitting.

44. Knitting of jerseys, gloves and socks is done partly with European worsted but also and much more with native yarn. In Ludhiána Rs. 4,000 worth was knitted in the year under report, and in Umballa Rs. 2,000 worth. Knitting is sometimes done with two needles, in which case the sock or glove is made in two pieces which are afterwards sewn together. For seamless socks or gloves three to five needles are used.

Manufacture of pashm.

45. As the process of dyeing will be treated later in a single section, we now came to the manufacture of pashm. This is the product not of a sheep but of the Thibetan shawl-goat which has two distinct hairy growths—ordinary hair, and mixed with it, pashm.

Operations up to spinning.

46. Generally speaking the hair and pashm are imported mixed, and the separating of the hair is done by women, and is a very tedious process, a woman's work being one chittak a day and her wages one to two annas. The pashm then after combing—a still more tedious process, the Kángra report says—is bleached by steeping it in rice-flour and water and putting it out to dry in thin flat leaves. When dry it is made into small balls and is ready for spinning and is spun as wool is spun. In the Kángra district the threads are made of a uniform length of $1\frac{1}{4}$ yards and each piece is called a *dhága*.

Fabrics made of pashm.

47. The chief fabrics made of pashm are shawls, Rampur chadars, *pashmína alwán* ("a fine white serge-like stuff," as made in Simla), *jámawárs* (striped pattern, made also in wool), *rumáls* and *garbi chadars*. The last-named article is comparativelv modern and probably has a future before it. In it the warp is of pashm and the woof of cotton. It is much stronger than the whole-pashm chadar; it is practically as warm and nearly as soft; and in delicacy of surface and attractiveness to the eye it may be said to surpass the older fabric. In 1880-81 the outturn of pashmína goods and of shawls was officially put at Rs. 11,04,642, and this figure may be taken to exceed somewhat the outturn for 1884-85.

Pashm, where manufactured and how the manufactured article is disposed of.

48. The use of pashm is practically confined to the districts of Ludhiána, Simla, Kángra Proper, Amritsar, Gujrát and Lahore.

(1) *Ludhiana.*—Out of the 800 maunds of imported pashm (value Rs. 40,000) retained for local manufacture are made Rs. 40,000 worth of *alwán*, (whereof Rs. 30,000 worth finds its way to Calcutta, Bombay, and elsewhere in India); Rs. 75,000 worth of Rampur chadars (whereof most are exported to Europe, Calcutta, Bombay and hill stations); Rs. 2,000 worth of *jámawárs*, exported to Europe for curtains at Rs. 200 per pair; and Rs. 4,000 worth of *garbi chadars*, of which half only are kept in the district.

(2) *Simla.*—The Rampur chadars made at Sabáthú, and, in fact, in almost any of the factories in the Punjab, are much superior to the chadar imported from Rampur Bassahir itself. A "Rampur khás" chadar can be bought for Rs. 9 to 13, and the size being 9 feet by $4\frac{1}{2}$, the rate is $3\frac{1}{2}$ to 5 annas per square foot. A Sabathu chadar, 12 feet by 6, goes from Rs. 25 to Rs. 45, or $5\frac{1}{2}$ to 10 annas per square foot. There is only a small colony of pashm weavers at Sabathu and the outturn is 70 chadars and 80 pieces of *alwán*.

(3) *Kángra Proper.*—Pashmína factories are only found at Nurpur and Triloknath. Thirty maunds of pashm are used in local manufacture. *Amlikár*, pashmína with silk embroidery work, is made at Nurpur, but the style and execution are very inferior to the genuine Kashmír *amlikár*.

(4) *Amritsar.*—This city imports all the different sorts of pashm including 3,000 maunds of *Wahábi Shahi* and 600 to 700 maunds

of "Rampuri pashm," most of which is probably not real pashm. A large quantity of garbi chadars is made in the city.

(5) *Gujrát.*—The pashm used is 2 maunds Kashmírí and 344 *Kirmáni (Wahábi Sháhi)*; and the value of the manufactures is Rs. 38,984, whereof two-thirds are exported. The quality has deteriorated, and the cause can easily be understood to be the excessive use of the Persian material.

There is no special information about the Lahore industry.

Shawl manufactory.

49. In shawl-making there is a comparatively minute division of labour; and the decline in the trade has made it impossible for all the different classes of workers to get steady occupation. The Kángra report states that the dyer would, if regularly employed, earn Rs. 2 *per diem*, but regular employment is not to be had. The designer (*nakkásh*) takes 10 days over a pattern and gets Rs. 2 to Rs. 15 for it. He draws the pattern with ink on white paper, the colours, &c., being indicated by technical marks. The *tarahband*, to whom the pattern is made over, then makes up the proper number of reels, and, at his direction another man (*moharrir ta'lím*), whose pay is Rs. 3 to Rs. 4 per mensem, prepares the papers to guide the weavers. The *tarahband* gets $1\frac{1}{4}$ annas per 1,000 reels; but, the *moharrir ta'lím* being in his pay, his net earnings do not exceed annas 8 *per diem*. The pupil (*shágird*), who does the weaving, does not earn more than 1 anna *per diem* now-a-days; and the *rafúgar*, who sews pieces of fabric together with silk to make *doshálas* (double shawls) gets 4 annas a day when working; but his employment is not continuous; and as the single shawl is coming into favour both among Europeans and natives, the *rafúgar's* position is gradually becoming more and more wretched. He, however, also gets 3 annas *per diem* for washing shawls when there are any to wash. There is also the *púzgar*, who picks out loose threads and gives the shawl a smooth appearance. Shawls are made chiefly in Nurpur and Triloknath in Kángra, where the number of factories has fallen from 80 to 20 in the last 20 years, and in Gujrát.

Causes of the decline of the shawl industry.

50. The causes given for the decline in the export of shawls and other pashmína goods are various. The persons concerned put it down to the check caused by the siege of Paris by the Germans, that city being formerly the chief customer, and to a subsequent change of fashion in Europe. I am inclined to attribute the decline rather to adulteration in the manufacture, to the success of the Rampur chadar industry in England, to the want of ingenuity in the production of new and artistic designs, and to the evil effect of the hard water of Nurpur on the the material used. The change of fashion is a good deal the result of these causes; and, for the miserable wages now to be got, improved work is hardly to be expected in the future.

Dyeing.

51. Wool intended for coloured *namdas* is dyed, but, with this exception, dye is always applied to the yarn or the made fabric. The variety of dyes used is so great that a mere enumeration of them all would be too lengthy for such a report as this. The chief colours are red, blue, turquois blue (*firúzá*), yellow, green and black.

(*a*)—Red, made with cochineal, needs three tolas of cochineal for one yard of cloth or quarter seer of thread. The cochineal is put into boiling water in which the cloth is immersed and then sulphuric acid and saltpetre in certain proportions are added. The drying is done in the shade. If a deep red is wanted the cloth must then be put in boiling water to which four tolas of turmeric, one chittak pomegranate seeds, two chittaks of sulphuric acid and saltpetre have been added. The *gulanár* shade of red is made by doubling the turmeric.

(*b*)—A common red is also made from lac, got from the ber (*Zizyphus jujuba*), the *kikar* of Sind (*Acacia Arabica*), the dhák (*Butea frondosa*) of Hindustán (not of the Punjab), the banyan (*Ficus Indica*) and the pipal (*Ficus religiosa*).

(*c*)—Blue (*nilá*) is made in many shades, the basis being indigo and the fixing material chiefly sulphuric acid. Turquois blue, (*firuzá*) is made from an imported dye with alum added during the process.

(*d*)—Yellow is got in many ways. One concoction used contains *akalbír* (*Datisca cannabina*), turmeric and alum; another *Kesu*, or the flower of the palás or dhák (*Butea frondosa*), which however gives only a transient dye. Yellow may also be got out of the rind of pomegranate (*náspál*) with some fixing substance added.

(*e*)—Green can be got by dyeing first for blue and then for yellow as is done in Kulu; or by adding to the concoction for blue, turmeric, *akalbír* and alum.

(*f*)—Black is made in many ways. In the hills green walnut shells are used and the black colour produced is very intense and lasting. Another deep black is got from indigo added to a fermented compound of *gur*, *átá*, and the refuse after iron is smelted.

In dyeing wool such substances as sulphuric acid and lime are added merely to help the wool to absorb the colour. *Akalbir* is used with the same object.

Woollen fabrics requiring bleaching are exposed to the fumes of burning sulphur. Aniline dyes as used in the province are never fast. I understand that their use is increasing. The *garbi chadar* (*pashmína*) can only be dyed *kháki*, but is generally undyed. Dyers are generally a separate caste and they are, as compared to spinners and weavers, well off.

Goat's hair. Cleaning.

52. Goat's hair (*jat*) is used in most districts for making ropes, nose-bags, sacking, *jhúls* for cattle, and matting for floors. The cleaning and opening up of the hair is done in some districts by laying the stuff out on the ground and beating it with a stick. In Hissár it is first washed and put into hot ashes to dry and then the beating is done. Lastly, in Muzaffargarh the bow-string (*pínjan*) is sometimes employed and the hair is scutched; and both in Muzaffargarh and in Gujránwála it seems that a modified form of the bow-string is also used. A peg is stuck into the ground and a string tied to it. The other end of the string is fastened to a stick in the operator's hand, and the goat's hair is deposited on the ground over the string, and the string is made to vibrate by being slackened and suddenly tightened up with a jerk. Sometimes there are two pegs at a short distance apart, in which case each peg has a string, the further end of which is attached to the operator's stick.

Spinning.

Spinning of goat's hair is done with the *charkhi* but more commonly with the *dherná*. Double threads are twisted just as woollen twist is made, and ropes are made by hand-twisting, generally of three strands.

Weaving.

Weaving is done on a small loom without shuttle. The place of the shuttle is, as in carpet-weaving, taken by a stick, to which the woof thread is attached and which is worked through the warp-threads alternately as it meets them.

Camel's hair.

53. Camel's hair (*milsee masal*, *mallas*) is twisted by hand and not spun. It is mixed with goat's hair to make sacking, and with cotton (which is used for the warp) to make *bhakla* cloth (Hissár); but it is mostly used for rope-making.

Neither goat's nor camel's hair is dyed.

No reliable figures of number of hands employed in various processes.

54. I have found it impossible to give reliable figures for the Province of persons engaged in the various processes, and the figures of the census report of 1881 would certainly be as nearly correct as any guesses I could make in the case of weavers and other special castes.

Workers in pashm have diminished in numbers, and so have shawl-makers, who are chiefly Kashmíris.

The shearers belong to no special class and do not work exclusively at shearing. Scutchers are in some places of a special caste, but even they do not live solely by scutching; and in many places any man of the sweeper caste will scutch wool, and here and there women of the zamíndár class will scutch for themselves. Spinners are in very few districts a special class, and almost anywhere men and women are ready to spin for themselves when occasion arises. There are regular weavers in many districts, but *chamárs* and other such castes take to weaving as an alternative business to their caste

occupation. There is only one large woollen factory in the Province, if the jails be excepted, and that is the Egerton Woollen Mills. The employés there number 250 men, 20 women and 2 young boys. The process of manufacture in these mills is such as may be found described in any text book.

Adulteration.

55. The habit of adulteration of woollen fabrics for the purpose of deceiving customers is very prevalent in all those manufactures that are intended for sale. Besides the passing-off of wool as pashm already noticed, we find that in shawls, chadars and carpets transient colours are used where fast ones are indispensible. In several districts where cotton is cheap, that material is mixed with the wool, and white chadars that will not bleach properly or that are flimsy are loaded with various white powders to conceal the defects. Even in the case of blankets of only medium costliness we find, in the Karnál district, a nefarious practice of loading the stuff with a preparation of the bark and gum of the *Kaindú* tree and ashes of burnt reeds to make it look warm, thick, and heavy. Being secrets of the trade, detailed information on such matters is hardly attainable.

D. C. JOHNSTONE,
Assistant Commissioner.

NAGAR, KULU, *5th May* 1886.

MONOGRAPH

ON

WOOD MANUFACTURES

IN THE

PUNJAB,

1887-88.

Published by Authority.

Price, Annas 8.

Lahore:

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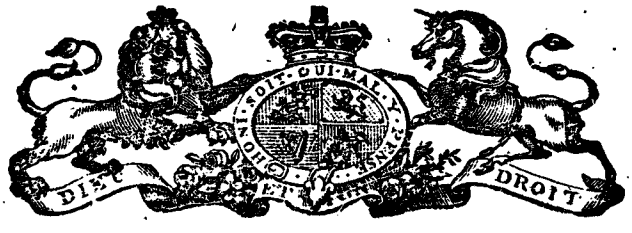

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No. 602.

FROM

H. C. FANSHAWE, ESQUIRE,
Offg. Secretary to Government,
Punjab and its Dependencies,

To

D. C. JOHNSTONE, ESQUIRE,
Junior Secretary to the Financial Commissioner,
Punjab.

Dated Lahore, 18th November 1889.

Revenue and Agriculture.

General.

SIR,

I AM directed to acknowledge the receipt of your letter No. 708, dated 14th October 1889, submitting, with the Financial Commissioner's remarks, the monograph on wood manufactures compiled by Mr. M. F. O'Dwyer, C. S.

2. The Lieutenant-Governor agrees with Mr. Elsmie that the monograph has been carefully prepared by Mr. O'Dwyer, and that the pains bestowed upon the work are deserving of approbation. Manufactures in wood, as remarked by the Financial Commissioner, are not of much commercial importance, at least as regards export to places outside the Province. Apart from the use of wood in buildings, the demand for articles manufactured from wood was in the times preceding British rule very limited indeed, being confined, with few exceptions, to the carved doors and windows of the houses of the better-to-do classes, the rough agricultural implements mentioned in the report, and the scanty furniture found in a Native house. That with the introduction of European rule the Native workers in wood have been able to meet the very considerable demand of both European and Native customers for furniture, carriages and carts and other articles of the kind is a matter of no small importance, and, though exports may for many years to come be confined to a few articles of artware, not elsewhere produced, yet the manufacturing industry can with justice be said to be progressive so long as it can comply with the requirements of a population growing in wealth and civilization.

I have, &c.,

H. C. FANSHAWE,

Offg. Secretary to Government, Punjab.

Punjab Government Press, Lahore—25-11-89—556.

No. 708.

FINANCIAL COMMISSIONER'S OFFICE,

LAHORE, *dated the 14th October* 1889.

FROM

D. C. JOHNSTONE, ESQUIRE, C.S.,

Junior Secretary to Financial Commissioner, Punjab,

To

H. C. FANSHAWE, ESQUIRE, C.S.,

Junior Secretary to Government, Punjab.

SIR,

The preparation of a monograph on the wood manufactures of the Punjab, to be based on the district reports called for in this office Circular No. 15 of 1888, was entrusted by the Financial Commissioner last year to Mr. M. F. O'Dwyer, C.S., then Assistant Commissioner of Shahpur, and now Settlement Officer, Gujránwála. The monograph is now submitted for the perusal of His Honor the Lieutenant-Governor. It has been much delayed by circumstances beyond Mr. O'Dwyer's control, namely, his acting as Deputy Commissioner of Shahpur for several months and more recently as Under-Secretary to Government.

G. R. Elsmie, Esq., C.S.

2. Mr. Elsmie is of opinion that Mr. O'Dwyer shows considerable skill in dealing with the material at his disposal, and has earned the commendation of Government. The monograph gives much useful information regarding one of the industries of the Punjab, which, though perhaps of no great commercial importance at present, is nevertheless interesting in itself, and may very possibly prove capable of considerable development in some of its branches—*e. g.*, carving, furniture-making, boat and cart building.

3. Of all the district reports Mr. Maynard's (Hissár) appears to have been the only one of marked value; but the reports of the following officers deserve praise:—Baron Bentinck, Deputy Commissioner, Jhang; Moulvi Inám Ali, Assistant Commissioner, Hoshiárpur; Narendra Náth, Assistant Commissioner, Gurdáspur; Mr. Bunbury, (lately) Assistant Commissioner, Peshawar; Mr. Nicholl, Secretary to the Municipal Board, Amritsar. Mr. O'Dwyer also received, he says, great assistance from Kirthi Singh, Manager of the Kalra Ward's Estate, district Shahpur.

I have, &c.,

D. C. JOHNSTONE,

Junior Secretary to Financial Commissioner, Punjab.

MONOGRAPH ON WOOD MANUFACTURES IN THE PUNJAB.

Inadequacy of the returns.

A thoroughly satisfactory account of the wood industries of the Punjab will require a more exhaustive enquiry into the conditions of the trade than has yet been made. Indeed, it may be doubted whether any inquiry conducted within reasonable limits would give results of more than relative accuracy. From the Statistical Returns, however, a general idea of the relative importance of the different branches of the industry may be gathered.

It may be remarked here—

1*st*, that the District Returns are far from uniform in regard to the branches of the industry for which statistics are supplied;

2*nd*, that, with one or two notable exceptions, the District Reports are strong only in subjects which have been treated already by Messrs. Baden-Powell and Kipling (*Punjab Manufactures* and the *Journal of Indian Art*).

2. The subject will briefly be treated under the following heads, statistics being inserted along with the text, while statistics showing the state of the handicraft in the different districts will be thrown into the appendices:—

A. Wood supply, wood-yards, measurements and prices, &c.
B. Castes.
C. (*a*) The "Sep," or village tarkháns, &c.
   (*b*) Tarkhán as an artistic workman.
   (*c*) Wages.
D. Architectural wood-work.
E. (*a*) Lacquer-work and turnery.
   (*b*) Kamángiri.
F. Furniture—
   (*a*) Native.
   (*b*) European.
   (*c*) Inlaid-work.
G. Carriage-building—
   (*a*) Native.
   (*b*) European.
H. Boat-building.
I. (*a*) Musical instruments.
   (*b*) Miscellaneous.

A.—WOOD SUPPLY.

3. The question whether the wood supply is likely to continue equal to the demand is too large to be discussed within the limits of this monograph. In brief, it may be said that the process of natural reproduction on the higher ranges is generally satisfactory, and also in the outer ranges, where the growth of seedlings is not interfered with by fires or by grazing. The Forest Department also annually plant or sow a considerable area of land; the total area of plantations being in 1887 about 17,997 acres, a small reserve. Further reserves will be found in the reserved protected forests and the unclassed State forests under the Forest Department:—

Reserved Forests	1,551 square miles.
Protected	376 „ „
Unclassed	3,272 „ „
Total ...	5,199 square miles.

4. The value of timber, excluding firewood, sold by the Forest Department during the year 1887-88 was Rs. 3,27,000; in 1886-87, Rs. 6,33,000. The average amount annually sold is close on 5 lakhs.

(1) Imports from other countries.

5. Timber is imported largely from Kashmír, the Native States of the Punjab, and the independent territories of Afghánistán. Deodár logs, pine sleepers, scantlings and bamboos are most commonly imported. The extension of railways in the Punjab gave an enormous impetus to the trade. The value of these imports for the four years ending 1886-87 averaged 12½ lakhs of rupees per annum, excluding firewood. The increasing use of steel sleepers has, however, given a check to the demand. The imports in the year 1886-87 were only a little over 10 lakhs, and in 1887-88 were probably still less. Nearly all of this wood is brought down by river from Kashmír and sold at the great central depôts on the Jhelum, Chenáb and Rávi.

(2) Imports from other provinces.

The imports from other provinces is comparatively small. In 1886-87 160,000 maunds were so imported, to which a value of Rs. 1,60,000 is assigned. The imports are chiefly from North-Western Provinces (Rs. 1,25,000) and Karáchi (Rs. 18,000).

(1) Exports to other countries.

6. There is practically no export of wood to other countries.

(2) Exports to other Provinces.

The exports to other provinces average 35,000 maunds annually, valued at Rs. 35,000. This goes chiefly to Sukkar in Sindh and to stations in the North-Western Provinces.

7. It appears, therefore, that on the average wood to the value of five lakhs of rupees is sold annually by the Forest Department of the Province, wood to the value of Rs. 12½ lakhs is imported from other countries, and 1½ lakhs from other Provinces, giving a total of 19 lakhs. As the exports of wood are insignificant, all this wood may be said to be worked up in the Province. In addition to this must be reckoned the value of the wood cut and sold within the Province by private persons, Public Boards, &c. Of this there is no record; but, estimating its value as 16 lakhs of rupees, we get the total value of the wood annually worked up within the Province as 35 lakhs. No doubt the greater portion of the imported wood is taken by the Railway and Public Works Departments for sleepers and building purposes; and the introduction of steel sleepers for the Railway and of iron rails for roofing purposes will tend in future years to considerably diminish their demand.

Wood-yards and dealers.

8. The increased demand of wood of late years for railway and building purposes, with the consequent increase of the supply, has naturally increased the number of dealers—wholesale and retail. This class is found chiefly at the great depôts on the Punjab rivers, where the timber imported from Kashmír and other foreign territories by river is stocked, *viz.*, Jhelum, Wazírabad, Phillour, &c., and also at the sale depôts of the Forest Department. The information supplied as to their numbers, methods of doing business, scale of profit, &c., is very scanty; but there seems reason for supposing that this special class have got the monopoly of the business into their hands, and this may be one cause of the complaint that wood is getting scarcer and dearer.

At all the large depôts wood seems to be as plentiful and cheap as it ever was, and the Forest Department appear to have some difficulty in disposing of their produce, for the value of the unsold timber in their depôts at the end of the year 1887-88 was Rs. 2,95,000 as against Rs. 92,000 at the end of the year 1886-87. There is, therefore, no lack of the raw material, and there seems to be no ground for the statement that shisham, &c., are growing scarce and difficult to procure. Were it so, one would expect the prices to be much higher than they are at present. In certain localities, such as Simla and its neighbourhood, all the better class of timber-trees are growing scarce, and the prices are high, but with regard to the Province generally the supply is quite equal to the demand. To this remark an exception must be made in the case of walnut, which tarkháns declare is not only scarce, but often is not to be had.

9. The following are the prices for the more important species of timber:—

	Per cubic foot.					
	Rs.	a.	p.		Rs.	a.	p.
Trees of foreign growth.							
Deodar (*Cedrus deodar*) ... ... (In Government depôts 11 annas per cubic foot for logs less than 12 feet, and 1 anna per every additional foot in length)..	0	12	0	to	1	8	0
Chil (*Pinus longifolia*)	0	6	0	to	0	12	0
Kail (*Pinus excelsa*)	0	6	0	„	0	12	0
Khair (*Acacia catechu*)		...			0	1	0
Dhaman (*Grewia oppositifolia*)		...			0	6	0
Kiláwa (*Wrightea mollissima*)	0	8	0	„	0	12	0
Chikri (*Buxus sempervirens*)		...			0	3	0
Kahu (wild olive)...		...			0	2	0
Trees of indigenous growth.							
Táli / Shisham (*Dalbergia sissu*)	0	12	0	to	1	8	0
Tún (*Cedrela tuna*)...	0	12	0	„	1	8	0
Kikar (*Acacia arabica*)	0	6	0	„	0	12	0
Tút (*Morus laevigata*)	0	6	0	„	0	12	0
Jáman (*Sizygium jambolanum*)	0	6	0	„	0	12	0
Drek [or bakain] (*melia*)	0	6	0	„	0	12	0
Ber (*Zizyphus Jujuba*)...	0	6	0	„	0	12	0
Phulái (*Acacia modesta*)...	0	6	0	„	0	12	0
Siris (*Acacia speciosa*)	0	6	0	„	0	12	0

A full list of the timber-trees used in the Punjab, with the uses to which the wood is put, will be found in Appendix I.

Measurements.

10. In wholesale dealings with the Forest or Public Works Departments the cubic foot is the unit of measurement. It is also employed by petty dealers and carpenters in buying from depôts. Tarkháns, in dealing with one another, sell by the tree or the block, and to compute the size they have recourse to the tassu system of measurement. The tassu contains 1,536 cubic inches, and is, therefore, eight-ninths of a cubic foot. The tassu is, however, a multiple of a smaller measure, the tanswańsi, 24 of which go to make a tassu and 27 to make a cubic foot. As far as can be gathered from the reports, the tassu does not vary, at least in theory, in different districts.

B.—CASTES.

Castes.

11. The tarkhán known as barhai in the North-Western Province and as khati in the eastern plains, is, like the lohár, said to be in origin a village menial. The caste is much sub-divided; a list of these sub-divisions, though far from complete, is given below. The figures, where available, are taken from Mr. Ibbetson's Census Report. It will be noticed that the gôt names coincide very largely with the names of small agricultural tribes. This fact tends to prove community of origin of the tarkhán and the people amongst whom he lives, and also the fact that tarkhán is rather the name of an occupation than a race distinction.

Table for Divisions.

Divisions.	Number.	Chief Gots.
Dehli	91,045	Jahugra, Khatti, Pathán, Shekh.
Jullundur	110,784	Dhaman, Dhamnah, Ghora, Jhiwar, Khatti, Netál, Rájpút, Siawan.
Lahore	125,446	Arora, Bhatwál, Bhatti, Dhaman, Gade, Khatti, Khokkar, Matháru, Megh, Sikh, Siawan, Taru.
Ráwalpindi	138,025	Arora, Awán, Bhatti, Chohán, Janjua, Khokkar, Thori, Sikh.
Pesháwar	24,390	Awán, Afghán, Begi Khel.
Deraját	18,319	Bhatti, Butcher, Chogatta, Janjua, Dhobi, Khokkar, Jhiwar.
Total	508,008	

12. The total male adult tarkhán population may be estimated at one in six, or, approximately, 84,668. Figures for the more important gôts, taken from the Census Report, are as follows :—

Gots.	*Total population.*
Bhatti	18,837
Begi Khel	2,212
Dhaman	71,519
Gade	2,209
Jahugra	9,518
Janjua	12,576
Khatti	19,071
Khokkar	27,534
Matháru	6,971
Netál	2,764
Siawan	1,932
Dháru	2,822

For alphbetical index of gôts or sub-divisions, *see* Appendix III.

C.—TARKHÁNS AND THEIR WAGES.

The Sep: his position and wages.

13. The village tarkhán is chiefly occupied in the making of agricultural implements or in executing petty repairs. If work of a higher order be given him, perhaps, if not artistic, his work will certainly prove equal to the requirements of his village employers. To better his position, the villagh tarkhán often migrates to seek employment on the Railway, or settles to earn a precarious livelihood in some neighbouring town. This is the extent of his enterprise.

His position in his native village, though the best amongst the class of village menials, is poor. He seldom rises into a position of affluence. In a few isolated cases, as in the Lahore District, he has been able to acquire land; but in general he lives from hand to mouth, and can do little more than make both ends meet. For all ordinary work— *e. g.*, repairs—the village tarkhán is paid in kind. For special work, such as construction of well-gear, carts, &c.,* he is paid at the rate of three to five annas per diem. The zamíndárs, however, sometimes prefer to give larger pieces of work, such as the construction of Persian wheels, out on contract; the employer finding the timber and food. In such cases the wages is a lump sum equal to the price of raw material. In villages of the Ráwalpindi Division he receives on an average 32 seers per plough.* In the Delhi Division he receives 40 to 50 seers per Persian wheel, or half as much per plough, also a sheaf (bhar = 10 seers) and a bundle (gaira = 5 seers) per harvest. In a Sutlej village he receives four maunds per well, a topá per heap, and 20 twists of tobacco and a day's cotton picking per harvest. In a Rávi village he receives three maunds and a sheaf of grain, &c., per harvest.

The Sep's outfit.

14. An ordinary Sep's outfit will probably not cost less than Rs. 15 and not more than Rs. 30. It consists of—

		Price.								
		Rs.	a.	p.		Rs.	a.	p.		
(1)	*Kulhára* (axe)	2	0	0	to	3	0	0		
(2)	*Tesha* (adze)	1	8	0	to	2	0	0		
(3)	*Sáthra* (chisel)	0	4	0	to	0	12	0		
(4)	*Ara or ári* (saw)	1	4	0	to	2	8	0		
(5)	*Varma* (drill)	0	6	0	to	0	12	0		
(6)	*Retí* (file)		...			...			0	8	0
(7)	*Hathora* (hammer)		...			...			0	8	0
(8)	*Compasses* (parkár)		...			...			1	0	0
(9)	*Randah* (plane)		...			...			0	12	1
(10)	*Sutlí* (string)		...			...			0	1	0

All these instruments † are of Native manufacture. English files, saws and planes are coming into use but slowly.

The Sep's work.

15. In addition to the ordinary repairs, the village tarkhán turns out the following agricultural implements, for a detailed account of which Mr. Baden-Powell's book may be consulted :—

* *See* Settlement Report.

† For descriptions, *see* Punjab Manufactures, Volume II., Baden-Powell.

(1) *The plough (hal).*—In its usual form the plough consists of five pieces : (*a*) the beam (kur) of tali or kikar ; (*b*) the shaft (hal) of khair or kikar ; (*c*) the upright (janji) of ber ; (*d*) the handle (hath) of kikar ; (*e*) sarma, the piece of wood attached to the shaft ; (*f*) the share (phála) is made by the lohár—the cost is not more than Rs. 2-12-0.

(2) Panjáli, or yoke of drek, kikar or ber, cost Re. 1-12-0.

(3) Sohága, or clod-crusher, a wooden beam about seven feet in length, nine inches broad and six inches deep, of kikar or táli, cost Rs. 2-8-0

(4) Jandra, a large wooden rake with long handle, used for preparing small beds for irrigation, of kikar, cost Re. 1-8-0.

(5) Karáa large square rake for levelling, cost Rs. 2.

(6) Trangli, wooden pitch-fork with 8 or 9 prongs, cost Re. 1.

(7) Sanga, a wooden fork with two prongs, cost As. 12.

Other instruments of which the tarkháns make only the handles are : the dátri (sickle), price 3 annas ; the ramba or khurpa (trowel), price 4 annas ; the phora, kassi or *kahi* (mattock), price Re. 1 ; the gurdasa or laka (chopper), price 8 annas.

Special machines made are :—

	Price. Rs.	a.	p.
Rice husking machine	5	0	0
(*Belna*) sugar-cane	45	0	0
(*Kapas belna*) cotton-cleaning	1	12	0
(*Kohhl*) oil-crushing	8	0	0
Persian wheels	40 to 50	0	0
Jhallárs	30	0	0
Dhingli	1	4	0

These prices do not offer a large field for competition by machines of greater efficiency and improved construction, and only in the case of sugar-cane machines has the attempt to introduce a superior type of machine proved a commercial success. It is possible that the zamíndárs (with increasing intelligence) may in the future take kindly to improved forms of ploughs, &c., but of this there are few signs at present. Materials do not exist from which (even fairly accurate) tables can be made ; but on a rough calculation, the amount turned out, or, more correctly, the amount absorbed by the village tarkhán, cannot be much under Rs. 60,00,000 (sixty lakhs).

The city Tarkhán.—Mr. Kipling.

16. The members of the tarkhán class found in the towns are in general more intelligent and better handicraftsmen than those in the villages. But they are equally characterized by a lack of enterprize. "Even if they find a good market for any particular class of goods they turn out piece after piece which, usually copies of copies to begin with, have all the defects of the first copy gradually magnified till soon all technical merit is lost."

The Tarkhán as an artistic worker.—Mr. Kipling.

A tarkhán will, if forbidden to copy European models, work with considerable effect and artistic propriety. But at best his work is spoiled by a certain want of finish. He exhibits a tendency to leave his work crooked in line and unfinished in joints. Work under European supervision in the Railway workshops and under the officers of the Public Works Department has gone some way in checking this tendency, but at the same time it has probably driven out of his head those ideas in the realization of which lay the excellence of his former work.

Native demand for artistic work.

17. Native demand for work of high quality is likely to continue to diminish. The Public Works Department have at least done this—they have effected an entire change in the public taste. Now public taste regards the small rooms and the floridity of the old house ornamen-

tation as remnants of its barbaric prime, and turns to the simplicity of the dâk bungalow as its model of perfection. Simplicity is no doubt to be desired, but plain doors with frames of different sizes, windows and doors that would not shut, or if once shut refuse to open,—characteristics of the average tarkhán's work,—do not go well with a severe simplicity, which, to be tolerable, must be perfect as regards joinery and finish.

The European market.

While the native demand will diminish, the European market with the opening of Railways is yearly becoming more accessible. There is no reason why Punjab wood-work, which is at the same time artistic and portable, should not find a ready market in Europe. Recent exhibitions have shown that specimens of Punjab wood-work are bought with avidity in England, and some impulse has no doubt thus been given to the trade.

Two wood-carvers from Bhera are now employed in London by the Kensington School of Art. Their expenses to England were paid, and they receive a regular salary of Rs. 90 per mensem. Probably artisans have also gone from other districts. This new development is due to the good offices of Mr. Kipling, who has done so much to bring the handiwork under the notice of the public, and to help the artisans to find a market. But if the tarkháns are left to themselves it is not probable that the stimulus will have more than a passing effect. The rise of the export trade will necessarily be slow; the difference in business habits, the unfailing want of punctuality in fulfilling orders, &c., must long act as hindrances, but these hindrances are not insuperable.

Wages.

18. The rate of wages has increased greatly, and that for all kinds of work. Taking the difference over a period of 25 years, one finds that while wages have doubled, the price of wheat has increased almost in proportion. So that the average tarkhán's position is little better than it was a quarter of a century ago. Skilled workmen are probably better off than they were before, and the agricultural tarkhán, sharing with the zamíndár in the benefit derived from the general rise in the price of grain, is in a stationary condition; if anything, his position is somewhat improved.

Authorities.

Some information regarding the rise of wages may by obtained from the *District Gazetteers'* statistical portion, Table XXVII., and from the statistics published by the Department of Finance and Commerce (with the Government of India) in the work "Prices and Wages in India."

With regard to the present scale of wages in the Punjab, it may be remarked that wages for skilled labor is highest near the great centres, towns or cantonments, and in the frontier districts; the Pesháwar and Dear Gházi Khan rates being exceptionally high. The following is a table of the rate of wages for the more important branches of the wood industry arranged for the different Divisions:—

Species of work.	Division.					
	Delhi.	Jullundur.	Lahore.	Ráwalpindi.	Pesháwár.	Deraját.
		Annas.	Annas.	Annas.	Annas.	
Agricultural ...	As. 3 to Re. 1.	2-6 to 3	4 to 5	3 to 5	4 to 5	8 to 14 annas.
Wood-carving ...		...	5 to 14	8 to 12	As. 10 to Re. 1	
Furniture ...		6 to 10	8 to 10	5 to 7	...	
Turnery ...		...	4 to 8	5 to 8	8 to 12	
Kamángíri ...		6 to 8	...	...	...	
Carriage-builders ...		6 to 10	8 to 10	8 to 10	12 to 14	
Boat do. ...		...	...	5 to 10	8	
Basket-makers ..		2-6 to 4	3 to 6	2 to 3	..	
Comb do. ...		2-6 to 5	3 to 6	2-6 to 8	..	

D.—ARCHITECTURAL WOOD-WORK.

19. It has frequently been remarked that the distinguishing feature of the industrial arts of the Punjab is their Muhammadan character. The remark is specially applicable to wood-carving. To quote the words of Mr. Kipling in the *Indian Art Journal*:—

"The Hindu fantasy of design which is so noticeable in other parts of the Empire, even in objects applied to Muhammadan uses, here finds expression only in a few rude sculptures and pictures, usually from hill districts, and are entirely absent from the buildings of the plains.

"The sculptures that once decorated the Gandhára monasteries in the Eusafzai country on the Pesháwar Frontier are exceptions; for in an artistic sense they are the most complete of any in India. But they belong to a time with which nothing now in existence in the Province has any connection, and they are the work of a race which has apparently left no other traces of its art, manners, or faith.

"The Sikhs were making a beginning towards a free Hindu modification of Muhammadan motives in architecture and decoration, and had already accomplished something, when they were overtaken by the English occupation. Their wood-carving has a character of its own, their foliage is elaborately lined and twisted, and small and grotesque figures, human and animal, inadmissible in Moslem work, were beginning to appear.

"But the essential characteristics of what may be called the official style —such as flatness of relief, absence of under cutting, the free use of geometrical diapers incised in line merely in relief or in framed lattice-work, and the late Mughal pillar, pilastic or mehráb,—were retained even by the Sikhs. In the hill temples made of wood (of which there are good examples near Simla), the familiar Hindu form of square pillar, chamfered or fluted into octagonal or circular shapes, and crowned by bracketed capitals,—the elements of a form highly elaborated in wood in Gujrát and in stone throughout a vast extent of India Proper,—is common enough, but it is scarcely ever seen in the Punjab plains, where a meagre square abacus crowns a lotus-shaped capital, and while it supports the lintel receives in its groved side a thin cusped mehráb or spandrel."

Little has been done in the Punjab in the way of carving small articles, *e. g.*, caskets, panels, trays, &c.—objects suitable for exportation. It is on large architectural surfaces that the best design is found. Recent exhibitions have drawn the attention of artists to this species of work, remarkable both for its quality and its cheapness. The result has been while to a small extent increasing the demand, greatly to raise the prices: and this tendency to unreasonably raise the price to European purchasers is one of the great hindrances to the extension of the trade.

20. Wood-carving is carried on in every district, and every large town has its master craftsmen. Bhera, Amritsar, Batála, Chiníot, Hoshiárpur, Hissár, have a provincial reputation. But in none can the trade be said to be thriving. Local demand will probably continue to diminish, and the export trade under the most favourable conditions can increase but slowly. Did wood-carvers form a separate craft they would be badly off indeed, but such is not the case; any ordinary tarkhán will turn out carved work of some artistic value. Mr. Kipling traces the secret of this widespread facility to the training which all carpenters receive in their youth. They go to work when very young, employ the leisure left them from helping their master or father in carving ornaments in relief on spare pieces of board, beginning with the dog-tooth notching that used to be popular in English artistic furniture thirty years since. From this they are promoted to foliated mouldings and diapers, and taught to draw the pillar in all its parts and the mehráb.

Centres of the trade.

There are many workmen who do not keep up their ornamental practice, but all learn some patterns; and those who are gifted with a feeling for design have with this constant practice acquired a crispness of touch and a surety of

execution which is of the first importance in wood-cutting, which "to be done well should be done at once."

21. As far as the craft can be considered a special and separate one, the statistics showing the number of workmen employed, &c., are given in the following table:—

Total for Province.	Muhammadan.	Hindu.	Caste.
4,086	938	...	Awán (Pesháwar). ChohánRajpút (Bhera). Chogatha (Deraját). Batti.

Of these 1,200 are reported to be proficient.

The reports are not very particular in distinguishing the castes, many even do not give the number for Hindús and Muhammadans. The figures are most unsatisfactory in every respect.

22. The subjects in the descriptive portion of this section will be taken in the following order:—

(i) Doors and doorways;

(ii) Balconies;

(iii) Pinjra, or lattice-work.

The door-frame (chaukat*), figs. I and II, consists of lintel, jambs (baju), and sill, ordinarily constructed of separate beams. The shape is in most cases rectangular, the height being to the breadth as 3 to 2 or $7\frac{1}{2}$ to 5.

(i) Doors and doorways.

23. The door itself has two leaves turning on pivots instead of hinges, the joining of the leaves being covered by a raised parting bead (bini), which is always elaborately carved. The leaves of the door are divided into panels, which are sometimes carved, sometimes plated with perforated metal (jharas—Hissár), or left plain and studded with star or shield-shaped metal bosses. The bands separating the panels are often, at least in the older work, carved in a deeply cut running pattern, which withdraws the attention from the monotonous regularity of the panelling, while at the same time it adds greatly to the richness of the general effect. In most modern work it is the bini, or parting bead, and the chaukat that receive the most attention. The forms of ornamentation are mainly arabesques; sometimes, however, conventional leaves and flowers of grotesque animal forms are introduced. The patterns followed are by no means new; the designs now in vogue are nearly all to be found in the older work. In the large panels above the carved lintel, it is the custom to introduce mythological figures with Gánesha or Shiva in some one of his numerous incarnations in the centre. In Muhammadan work, of course, the central panel is left plain, or is cut in some geometric pattern, or is fitted with an inscription. Frequently the doorway is surmounted by a second lintel (toda or shatiridár—Hissár) carved in a similar pattern to those below, but differing slightly both in proportion and form.

Centres of industry.

1. Hoshiárpur.

24. In the Hoshiárpur District the wood-carvers have something more than a merely local celebrity; the wood chiefly used is deodar, a wood which, owing to the ease with which it is worked, is fast taking the place of shisham. The statistics of the trade are:—

No. of workmen.	Caste.	Annual Outturn.
45	Tarkhán, Dhamnah, Rajpút	Rs. 53,438.

2. Hissár.

At Ratya, a small Sikh village in the Hissár District, admirable work, from an artistic point of view, is turned out. The workmen (Hindu) came originally from Sunam in the Patiála territory, a place celebrated for its wood-workers. There is much variety in their work, and their experiments in new designs, &c., are sometimes most successful. The adaptation of the irregular form of the toda or second lintel to the construction of the door-frame is the leading feature of the Ratya carving. The door-frame is not rectangular as it is elsewhere. Wings of wood-work cross from the lintel to each of the jambs at an angle of about 45° to each,

See Mr. Kipling, Indian Magazine of Art.

and the line of these transverse pieces is broken and relieved from uniformity by a variety of ingenious devices, among which the use of birds, which appear as flying caryatides, is peculiarly happy. The figures for the district are :—

No.	Hindu, Khatri.	Sikhs.	Muhammadan.	Annual Outturn.
223	171	20	32	No estimate.

It should be here mentioned that the Municipal Committee of Amritsar, in order to encourage the art of wood-carving, has started a school in the city, where technical instruction is given. This is an example which other well-to-do Municipalities—Lahore, Delhi and Peshawar—would do well to imitate.

3. Chiniot.

The work done at Chiniot is perhaps the most refined as well as the most artistic carving executed in the Punjab, but detailed statistics, showing the economic state of the industry, are not available.

4. Bhera.—Mr. Kipling.

The Bhera work, and the point in which it differs from that of Chiniot, are thus described by Mr. Kipling :—"The Bhera work differs from that of Chiniot, in that the projectures are flatter,—pilasters and other details being often merely indicated in relief instead of a half or quarter section being imposed,—and the whole of the surface is completely covered with boldly outlined forms of foliage and geometric diaper made out, for the most part, with a V section cut. There is something rude and almost barbaric in this direct and simple mode of execution; but, though there is no attempt at high finish, the general design and proportions are so good, and the decorative scheme is so full and complete, that the technical imperfection of the work, as carving, is scarcely noticed." The industry at Bhera, which, some years ago, was decaying is now very flourishing; the revival of the trade being due to the Indian Exhibition of 1885-86, where some samples of the Bhera work were awarded prizes and sold so well, that two of the artisans were induced to take up their residence in London, where they still ply their trade. The other workers at Bhera now turn out a regular supply for the English markets. The statistics are :—

No.	Caste.	Outturn.
80	Chohán Rájpút.	Rs. 16,000.

Wages of wood-carvers.

25. The wages of skilled workmen range from 8 annas to I rupee per diem. Average prices for carved wood-work are from Re. 1-4-0 to Rs. 2 per square foot for deodar, and from Re. 1-12-0 to Rs. 2-8-0 per square foot for shisham. Door and frame in deodar cost Rs. 40 to Rs. 80 (Bhera); in shisham Rs. 164 (Chiniot). Carving on shisham is from 50 to 75 per cent. dearer than on deodar, as the hardness of the wood makes the labour more difficult.

Instruments.

26. The instruments, with the exception of the saws, are entirely of native make. They are as follows :—

(1) Rukhni, (2) teja, (3) chaursi, (4) sathri, (5) choppers of various sizes, (6 gol hira of sizes, (7) miangi, (8) kazak, (9) tundi chaursi, (10) tesha, (11) ari of sizes, (12) panda, daraz, &c.

(ii) Balconies (bákhárcha); window (bári.)

27. The balcony is usually 8 feet in height and 4 feet in breadth. It is divided into three parts—the 'pendí,' or base; the 'sidhára,' or uprights; and the 'gumbaz,' or dome.

The *bákhárcha* is shown in fig. IV in plan and elevation.

The names of the various parts in ordinary use among Punjab workmen are also given.

The cost of a well-carved balcony as described above is Rs. 90 for shisham, and about Rs. 55 for deodar.

Fig. V shows a common form of bári, or window, which does not require a special description.

28. Pinjra, or lattice-work, like the other form of wood-carving, is essentially Muhammadan in origin. Mr. Kipling says :— "Geometric tracery is a constant element in all Muhammadan designs, and it is applied to carpentry and wood-work as well as to carved or inlaid marble or decorative painting. The Punjab manj or pinjra work is similar to the lattice-work seen in Cairene 'moucharabichs,' while the geometric framed work in relief made for ceilings is almost identical with the ceilings of Cairo. The Arab variety, which has the lattice bars in turned balls and over lattice-wrought forms is, however, unknown in the Punjab. Panels wrought into these forms have great decorative value in a composition of light and shade in wood-carving, from their effect of richness and repose."

(iii) Lattice, trellis or pinjra work.—Mr. Kipling. Pinjra work.—Mr. Kipling, *Journal of Indian Art.*

The pinjra is usually made of shisham. It may consist of as many as 2,000 separate pieces : these are joined together by a process of dowelling without the assistance of glue, the whole being held together by the frame. This species of work is very lasting, and, contrary to probabilities, the lattice-work holds together even after the frame has been broken or destroyed. "These geometric patterns are also cut in relief, and sometimes incised in deep line, but seldom perforated like the grilles inserted in pianoforte fronts."

Pinjra work is carried on at all the great centres, but only at Chiníot and at Pesháwar is the work specially remarkable. At both these places the demand has diminished greatly, and will probably continue to do so.

A panel of well-worked lattice 3 feet by 1½ feet will cost as much as Rs. 13, or somewhat over Rs. 3 per square foot. The figures for the industry are :—

No.	Caste.	Outturn.
160	Awán, &c.	Rs. 2,500

Pinjra work is exported from Pesháwar to Kábul, it is said, in considerable quantities. The wages is reported to vary from annas 12 per day in Jhang to Re. 1 in Pesháwar, but these comparatively high rates must be discounted by the fact that the artificers do not receive regular and uninterrupted employment owing to the decreasing demand.

E. LACQUER-WORK, TURNERY, AND KAMÁNGIRI.

29. The kharádi (turner) is found in every town and large village. His work is to be seen in every villager's house. Much of his work is crude in design and colour, and rough in execution, but it improves *pari passu* with the increase in refinement and wealth of the purchasing public : thus the manufactures of the city turners are in general better in quality than those of his village brother; and in the five towns mentioned below he exhibits a delicacy of touch, a sense of colour, and an elegance in design, which goes far to raise the trade to the dignity of a fine art :—

(*a*) Punjab turnery and lacquer-work.

Table of Turners arranged according to Divisions.

Divisions.	Caste and Got.	Hindu.	Muhammadan.	Total.	Average daily wages.	Outturn.	Places.
					Annas.		
Delhi ...	Sheikhs, Khális, &c.	13	333	346	4 to 8	39,500	None.
Jullundur ...	Tarkhán Dumnah, Jhiwár, Rájpút.	27	594	621	6 to 8	1,20,381	Hoshiárpur.
Lahore ...	Khokhar, Dhaman, Siawán, &c.	140	646	786	4 to 8	86,800	Pákpattan.
Ráwalpindi ...	Tarkhán, Sikh ...	200	625	825	5 to 7	85,000	Shiwál.
Pesháwar ...	Awán, Afghán ...	...	156	156	6 to 12	12,750	Pesháwar, Maira.
Deraját ...	Bhatti, Chogatta ...	...	276	276	4 to 8	42,000	D. I. Khan.
	Total ...	380	2,630	3,010	6	3,86,431	

30. The turner's instruments, detailed below, are rough and primitive, and are mainly country-made. In common with the rest of the tarkhán class, however, he is slowly finding out the merits of English steel, and one frequently finds that his chisels, saws and files are of English manufacture.

Implements.

(1). The lath (adda) consists of two iron bars (killa), one fixed in the ground, the other to be adjusted for distance. On the inner side of each bar is a spike to which the block of wood to be turned (mochha) is attached. Between this block and the adjusting bar and over the spike is fixed a cylindrical peg (chari), round which the thong of the bow (kaman) is once passed. The bow is worked backwards and forwards, and thus imparts the necessary rotatory motion.

(2). Nán, nihán, heavy chisels for the operation of rough clearing the wood.

(3). Mathna, a light chisel.

(4). Addi, the rest for the chisel.

(5). Buraki, a pointed chisel for grooving.

(6). Sathra and sathri, narrow-edged chisels of sizes.

(7). Chúrna, rachi, roda, an iron bar, ends flat bladed, and edges sharp for separating the cylinders, &c.

(8). Bomkinja or patra for cleaning out the inside of vessels to be turned hollow.

(9). Tesha, the adze.

(10). Varma, the drill.

(11). (Ari) saws and files (reti).

(12). Rangata, the polishing stick, &c. The woods used are shisham and poplar.

31. After the articles have been turned to the required shape on the lath, the colour is applied by pressing sticks (batti) of coloured lac to the revolving surface. Sometimes two or three colours are laid on in patches to produce a mottled or marble ground (Dehra Ismail Khan). Borders are usually made in two or three colours superposed, and the pattern is etched with a chisel. When colours are superposed, the invariable order is first red, second green, and third black. The coating of colour is rendered even by means of the polishing stick, a piece of bamboo, or the midriff of a palm leaf. To produce a pattern in green the black is scraped through, for red both the green and black are scraped away, and for white the wood itself is exposed. The lac stands well the extreme heat of the sun and the damp of the rains, but cannot be compared in these qualities to Japanese lacquer-work.

Method of lacquering.

32. The colours are mostly mineral. Yellow is made with orpiment, green is the arsenite of copper, red with red-lead or vermilion, blue with lájward or Prussian-blue, black with lamp-black.

Colour.

The usual method of manufacture is as follows :—

Yellow.—Quarter seer shellac and 2 chitáks sulphide of arsenic (hartál); pound the latter in a mortar, mix the shellac in, and, warming gently, mount the mixture on a stick, cool, and take off the pigment and roll it into a cylinder (batti).

Colour sticks (batti).

Red.—Quarter seer shellac and 2½ chitáks of vermilion; treat with water and pound for several hours, dry and mix with shellac and proceed as for yellow.

Green.—One chiták yellow; warm and mix one tola of indigo and proceed as before.

Black.—Quarter seer shellac and 2 chitáks lamp-black, &c.

Blue.—Quarter seer shellac and 2 chitáks carbonate of lead; pound and mix indigo, &c.

Lájward.—Quarter seer shellac, 2 chitáks white lead, and 4 tolas bottle colour (ajaib rang); warm shellac gently, mix the two other ingredients slowly, &c.

1 Centres and local peculiarities.

33. The following places may be regarded as centres of the trade:—

(1) Sáhiwál (Shahpur District).
(2) Dera Ismail Khan.
(3) Pákpattan (Montgomery).
(4) Ferozepore.
(5) Hoshiárpur.
(6) Jullundur.

Place.	Caste.	Hindu.	Muhammadan.	Total.	Outturn.	Articles for which famous.
Sáhiwál	...	...	73	73	8,000	(Fig. for District).
Dera Ismail Khan	...	...	66	66	18,000	
Pákpattan	Dhaman, Khokar ...	...	122	122	...	
Ferozepore	...	...	...	1	...	
Hoshiárpur	Dumnah, Jhiwár ...	13	309	322	46,728	
Jullundur	...	...	...	285	33,653	

1. Sáhiwál.

Sáhiwál lacquer-work, as compared with that of other centres, is rough and crude. It is, however, characterized by great freedom in design. Aniline dyes are much used, an aniline mauve being peculiarly unpleasant. The work done in two colours is most effective.

2. Dera Ismail Khan.

The Dera Ismail Khan work is unique in character, very few colours are employed, and the pattern is usually of fern-like scrolls of almost incredible minuteness and delicacy of execution, mostly wrought or scratched by women. The caskets, tables, &c., are lavishly ornamented with ivory studs, flowers and similar ornaments.

3. Pákpattan.

Pákpattan articles are remarkable for solidity of surface and design.

4. Ferozepore.

At Ferozepore, the work of an old pupil of the Mayo School of Art is skilful in execution and artistic in design. He uses the farásh (*Tamarix orientalis*), and not, as elsewhere, the shisham and poplar. His work is the best of the kind in the Province, but it is very high in price.

5. Hoshiárpur.

The Hoshiárpur lacquer-work differs from that of Pákpattan in the use of metallic tin ground under transparent colour, and, in addition to the scratched work of colour, figures of a mythological character are boldly pointed and covered with transparent lacquer. The brilliance in colour is secured by the use of aniline dyes, which are used to effect the same object at Dera Ismail Khan and at Sáhiwál. "Another peculiarity is the scratching of lines of ornament or figures in one colour of lac, and then filling the lines with another colour, the whole surface being made smooth. This is the method followed in Burmah, only the lac is applied on basket-work, and not on wood. Rude figures of divinities are freely introduced, and larger pieces are attempted here than elsewhere. Little care is, however, taken in the selection of the wood," &c. Compare Japanese or true lacquer-work also with the Hyderabad work, for which see *Art Journal*, page 47.

34. The turners as a class, as a rule, are badly off, and their wages are low —on an average 5 annas 6 pies per diem. Some members of the class, however, as those enumerated in the table of turnery centres, are very well off. These do not, as a rule, work for wages, but manufacture to order; the profits of the trade being probably not less than 25 per cent.

35. The following are the chief articles manufactured by the turners, with the range of prices for each article :—

Names of articles manufactured.	Price.		Remarks.
	Rs. a. p. Rs. a. p.		
Bridal chairs	10 0 0 to 30 0 0		Lacquered and elaborately ornamented with studs of ivory.
Pirá	4 0 0 „ 8 0 0		Low square arm-chair, favourite colours, red with black or yellow bands.
Pirí	2 0 0 „ 5 0 0		Stools.
Bed-legs	4 0 0 „ 8 0 0	D.I.K. 20	Sometimes lacquered, usually painted and covered with transparent varnish.
Walking-sticks	0 2 0 „ 0 8 0	1	Lacquered red and yellow, white &c.; sometimes a running pattern of flowers is scratched on them.
Wheels	4 0 0 „ 8 0 0	10	Often elaborately ornamented with ivory.
Toys	1 4 0 „ 2 0 0	per doz.	Dolls, tables, cups, saucers, plates, &c., model mills and toys of other and strange shapes.
Boxes...	8 0 0 „ 2 0 0	D.I.K. 4	With round dome-shaped tops.
Chess-boards and tables	7 0 0 „ 10 0 0		Highly effective, and price moderate.
Teapoys	7 0 0 „ 10 0 0		
Plates	...	4	
Ornamental vases	0 4 0 „ 1 8 0		Some elegant designs introduced by Colonel Corbyn at Sáhiwál.
Surábi	0 8 0 „ 5 0 0		
Guldán	1 0 0 „ 5 0 0		
Kharbúza	... 4 0 0		
Cigar-cases	... 4 0 0		Dera Ismail Khan.

(b) Kamángiri.—Mr. Kipling.

36. The Kamángar's art is fast becoming a thing of the past. There is no longer a demand for the bow and the quiver, on the decoration of which he used to exhaust the resources of his art, and only here and there is there any demand for surface decoration on wood. The native practice is to cover the ground either with cloth or some fibre, mixing whiting and glue, or, in some cases, to use the fibre for stopping crevices only. Over this sheets of tinfoil are pasted, and on this metallic ground designs are painted in water-colours, some of which, when varnished, are transparent. The varnish, too, is often yellow, and thus such portions of the tinfoil as are left become golden, while transparent blues, &c., are lighted through with a metallic sheen. The work still survives in a fitful fashion. It probably originated from the necessity of closing the pores of wood so as to prevent resinous exudations from blistering the work during the summer heats—a precaution which is only partly successful.

The bows are generally made from horn and bamboo. The largest trade seems to be at Muzaffargarh, which exports over Rs. 1,000 worth annually to the frontier districts, where the use of the bow is still retained. The price of a single bow varies from Rs. 4 to Rs. 8. The number of men engaged in the craft is—

Hissár	8
Muzaffargarh	20
Hoshiárpur	13

NOTE.—1. The use of aniline dyes is much to be deprecated; these colours are glaring and crude, and are utterly destructive of artistic effect. They soon lose their original brilliancy, but their cheapness is unfortunately making them increasingly popular.

2. The actual number of artistic workers is very small, only a few families in each centre. Jullundur is an exception to this, the turners there being considerable in number and annually turning out a large quantity of work, but the artistic value of the Jullundur work is comparatively low.

3. The great obstacles to artistic progress in the trade are,—1*st*, the conservatism of the workmen; 2*nd* the taste (for the most glaring colours) of their largest customers, the banya class; 3*rd*, the tendency in European purchasers to make them merely copy European models and designs.

4. It is required to show the turner the best designs and models, and then to assist him in finding a market for his goods. It would probably be advantageous to start local loan museums at the great centres, which the Mayo School of Art would furnish with models, &c., executed after the best native designs, &c. Take, for example, Hoshiárpur: the local museum would contain not only this local wood, brass, inlaid and lacquer-work, but would also have examples of models after the best and purest designs executed in other parts of the province and of India.

37. Small articles of domestic use—*e. g.*, pen-boxes, trays, &c.—are made commonly throughout the province, the chief centres being Delhi, Lahore and Jullundur.*

The prices of common work are as follows :—

Names of things.	Prices.	Names of articles.	Prices.	Names of articles.	Prices.
	Rs a. p. Rs. a. p.		Rs. a. p. Rs. a. p.		Rs. a. p.
Bow and quiver ...	...	Spear shaft ...	...	Ceilings ...	0 8 0 per sq. ft.
Kalamdán	0 8 0 to 2 8 0	Teapoy ...	5 0 0 to 15 0 0	Letter-racks ...	0 8 0 to 1 8 0
Book-stands	1 0 0 „ 3 0 0	Trays ...	0 4 0 „ 10 0 0		
Bows, Muzaffargarh...	4 0 0 „ 8 0 0				

F.—Furniture.

Furniture—(*a.*) Native.

38. The furniture in an ordinary native house is simple in the extreme, consisting only of a bed, a low with high-back chair (pirâ), and a stool (pirî). If the owner be rich there will also be carpets and masnads, &c. The houses of the educated classes are furnished more in conformity with European ideas.

The making of bed-legs is a very considerable industry, and considerable ingenuity is expended on their decoration. They are turned on the common lathe, and afterwards painted, varnished or lacquered, and ornamented with ivory knobs. The price ranges from as. 4 to Rs. 12 a set (for the double pair).

The "pira," or chair, and the "piri," or stool, are often elaborately ornamented; the method of manufacture is the same as for bed-legs. Some of the better class are even pretty to look at, and the brilliant colours, chiefly red and yellow, with which they are adorned certainly lights up the gloom of a native room. The district returns give the following figures; but it must be remembered that the turners as a class, para. 29, also turn out the same articles, so that a certain indefinite amount of their total outturn must be credited to native furniture :—

Engaged in bed-leg and pira manufacture { Hindu ... 311 / Muhammadan ... 198 } Total 509.

(*b*) European—Manufacture of European furniture also to a limited extent; centres Kartárpur and Batála.

39. Furniture after the European pattern is made in every district station and in every cantonment. The larger the station the better the prices, and the better the class of workmen. Given a pattern, a very fair imitation will be turned out. Chairs, small tables and almirahs, &c., are done well, but large tables are seldom well finished.

Gujrát.

40. The best known centres of the trade are Gujrát and Kartárpur in the Jullundur District. Gujrát is chiefly famous for its manufacture of chairs. The trade was started by a former Deputy Commissioner, Mr. Capper, who gave his name to a particular form of camp-chair, and his successors—Colonel Parsons, Colonel Harrington, and Mr. Wilkinson—each introduced different varieties. The trade is now on a permanent and secure footing; and though the Deputy Commissioner reports that the work is deteriorating in quality, owing to heavy competition with outsiders and the paucity in the demand, the Gujrát manufacture is as popular as ever. The annual outturn is about Rs. 4,200, of which Rs. 2,800 is said to be exported to other districts. The material employed is chiefly shisham, of which there is an abundant supply: and this is probably the reason why the industry has become localised in the district. The prices vary from Rs. 24 for the most elaborate form of easy-chair, brass bound and covered with leather, to Rs. 3 for the ordinary. Camp-chairs and good dining-room and office chairs cost Rs. 6.

* What is popularly known as Kashmír papier-machê work is often done on wood and made in the Punjab.

41. The Kartárpur industry is similar to that of Gujrát, except that the artisans are Hindús, while in Gujrát they are Musalmáns. Fifty-two men are occupied in the manufacture of arm-chairs, tables, desks and office-boxes, the annual outturn of which is estimated at Rs. 7,300.

Kartárpur.

42. At Simla a trade in furniture carved in walnut-wood has grown up of late years. The workmen are mostly Sikhs from the adjacent plains. The fret-saw cutting, which once enjoyed a slight popularity in Europe, is imitated, and Swiss brackets, clocks, &c., carved in wood, have furnished some models.

Simla.

Very good furniture is also turned out at Hoshiárpur, but the prices are high.

43. The number of workmen employed in the manufacture of European manufacture at the chief centres are :—

Ráwalpindi	40	Exclusively English furniture.
Amritsar	40	
Lahore'	100	
Gurját	44	
Siálkot	50	
Hoshiárpur	106	Also do inlaid-work.
Jullundur	57	
Simla	58	

The total for the province is 1,230, and the value of the furniture the workmen turn out annually may be estimated at between 1½ and 2 lakhs of rupees.

44. The inlaid-work is also of Muhammadan origin, and was probably introduced from Arabia. In the Punjab the chief centres are Hoshiárpur, and Chiníot in Jhang.

(c). Inlaid-work.

The wood inlay-work of Hoshiárpur has a high provincial reputation, and is capable of indefinite extension. The extension of this trade to articles of European use is mainly due to the efforts of Mr. Coldstream, C. S. For many years "qalamdáns" or pen-cases, walking staves, mirror-cases, and the low chouki or octagonal table common in the Punjab, and probably of Arab introduction, have been made here in shisham wood and inlaid with ivory and brass. The patterns were very minute, and covered nearly the whole of the surface with an equal spottiness. Mr. Coldstream procured its application to tables, cabinets and other objects, and during recent years a trade has sprung up which seems likely to grow to still larger proportions. It is probable that in future the most profitable field for the Hoshiárpur inlayers will be, not so much in the production of finished articles for European uses,—in the devising of which the native workman is obviously placed at a great disadvantage by his complete ignorance of Western usages,—but in the production of panels and details to be afterwards worked up by European cabinet-makers. The fault of the inlays is a certain triviality and insignificance of design, and its too equal and minute distribution. At various times some of the inlayers have visited Lahore, and have been shown at the School of Arts examples of good Arabic and Indian design, and they have been furnished with sketches. When the blackness and ugliness of an Indian village are considered, it is really matter for surprise that decorative invention survives in any form. An effort is now being made by one of the leading London firms of importers to introduce the Hoshiárpur inlay more fully to the best market. The ivory used is generally the waste stuff left by the turners of ivory bangles, and is worth from Rs. 2 to Rs. 4 per seer. It is frequently alleged that bone, especially camel-bone, is used as well as ivory, but both ivory comb-makers and turners make a good deal of waste, which is quite large enough for the small details of the inlay.

Black-wood, the old "hearth-wood" (*Diosporos tomentosa*), incorrectly called "abnus" or ebony by the workmen, is used both as a ground and in combination with ivory as an inlaying material, especially in the familiar herring-bone pattern. Brass is also employed, but with less effect; for, when foliated work in small patterns is worked in brass, it is necessary that the metal should have a better surface than it generally receives in the Hoshiárpur work.

Chiníot.

45. The brass inlay of Chiníot is superior to that of Hoshiárpur in design and in finish. Here the strips of brass are not, strictly speaking, inlaid, but rather laid on, and are retained in their place by the nails. The slightest warp in the wood is fatal to the effect, for the brass at once bulges up, and is not readily smoothed down again. The designs are strictly of Muhammadan type, such as may be seen in mosques and tombs all over India, and have less originality than the floral combinations invented by the Hindu carpenters of Mainpuri, North-Western Provinces. (*See* Mr. Growse's articles in *Art Journal* of 1887, para. II.)

Prices of inlaid-work.			Rs.
Hoshiárpur—Almirahs	... ...	to	80
Inlaid tables	... ...	to	28
Do. chairs	... ...	to	40
Native choukís	... ...	to	32
Qalamdáns	... ...	to	10
Looking-glasses	... ...	to	10
Teapoys	... ...	to	10
Boxes ...	... ...	to	10

Jhang (Chiníot) Rs. 6-6-0 per square foot.

46. From Hoshiárpur there is an export trade amounting to over Rs. 5,400 annually in inlaid-work. It is chiefly sent to Bombay and Calcutta. Rupees 10,000 worth is exported to other districts of the Punjab. The total number of workers is 106, and the value of the work they turn out annually is about Rs. 18,000. The average wages is 12 annas per diem. The figures for Jhang are not given, but the industry there is on a lesser scale than in Hoshiárpur. The outturn is probably not more than Rs. 4,000 annually.]

G.—Carriage Building.

Carriage-building—(a) Native.

47. The common forms are fully described in Mr. Baden-Powell's *Punjab Manufactures*, Vol. II., page 246.

They are as follows:—

(1) The bullock-cart (gári or gadá), drawn by two, three or four bullocks;
(2) The one-horse cart (ekka) and reri (for goods);
(3) The baili or ekka drawn by two bullocks;
(4) The rath used towards Delhi, a baili with richly ornamented dome.

A cart with two bullocks will carry 20 maunds and do 15 miles a day.

A cart with three bullocks will carry 30 maunds and do 15 miles a day.

A cart with four bullocks will carry 40 to 45 maunds and do 15 miles a day.

The woodwork is of ber, kikar, tút and shisham, all heavy and strong woods. For the construction of these conveyances, *see* Baden-Powell, pages 246 to 250. The usual prices are:—

	Price Rs.
Ekka	... 30
Cart	20 to 80
Rath	... 200

48. Carts are turned out everywhere; ekkás at Amritsar and Jandiála, and also in many other large towns. Trade in them is small. In Delhi, raths are largely turned out, there being considerable demand for them among Hindús on ceremonial occasions. The number of workmen employed is approximately as follows:—

	Number employed.
Carts and ekkas	2,159
Rath	51
Wheel-wrights	120

No figures for particular centres are available.

(b) European.

49. European forms are coming into vogue, not only in the large towns, but in the districts also. Those who can afford the cost prefer the easy-running tum-tum or phaeton to the old ekka

or rath. The woods employed are 'tút' and 'shisham.' Native-made English carriages are, in general, clumsily and coarsely made, and, even if elegant in shape, are always found wanting in finish. The axle boxes are always English. The painting or varnishing is done in a very rough way. The average tarkhán has no idea of getting a polish on his work. He thinks a couple, or at most three, coats of paint daubed on the carriage quite sufficient for all practical purposes (*see* Mr. Kipling, *Indian Art Journal*, 1887), and he does not allow a sufficient interval between the different coats.

Carriages are turned out in all the large cantonments and cities, but the Lahore work alone is worthy of remark.

	Prices.			Rs.		Rs.
Ráwalpindi—	Dog-carts	...	...	200		
	Wagonette	...	...	400		
	Phaeton	...	...	500		
Lahore —	Dog-carts	...	...	100	to	350
	Shigram	...	...	200		
	Phaeton	...	...	400		
Amritsar—	Tum-tum	...	...	20	„	80
	Shigram	...	...	175	„	200

In all 152 artisans are emlpoyed in construction of European vehicles, chiefly in Lahore, Amritsar, Ráwalpindi and Siálkot. No reliable figures as to the total annual outturn are forthcoming, but it may be estimated at Rs. 25,000 per annum. The best work is done by a European firm in Lahore employing native artisans—Sikhs; but in every large cantonment there are one or two building firms, most of whom also turn out furniture on the European model.

H.—Boat-building.

Boat-building.

50. Boat-building, which was so important an industry in former years when one of the principal means of communication was by water, has rapidly declined since the extension of Railways. Native boats, as a rule, are clumsy in construction and primitive in all their details.

Kinds.

They may be classified as—

(*a*) *Beri* takes cargo up to 1,000 maunds. These differ only in breadth of beam and length. They are used on the Rávi, Chenáb, Jhelum and Indus. They are built of 'diár' on the Punjab rivers, and of teak on the Indus; at the stern is the cabin for the boatmen.

(*b*) *Zarak* on the Sutlej is higher in build than the beri, and often has a chupper or booth on the deck for a cabin.

(*c*) *Kishti*, punt, with the prow tilted and pointed (made of chil, kikar or deodár).

(*d*) Varieties: (1) Dondi, the bow makes an angle of 30° with the water, the stern double that angle; (2) Yourik; (3) Dugga.

Mr. Kipling.

The sterns and cabin arches are usually ornamented with wood-carving. The decoration is incised and painted bright red, or green or white, which has a pretty effect when seen at a distance.

51. Boat-building is carried on to a greater or less extent in the following places:—

Prang in the Peshawar Division; Attock, Jhelum, Pind Dádan Khan, Khusháb, and Wazírabad in the Ráwalpindi Division; Lahore in the Lahore Division; Rupar in Umballa; and Muzaffargrah.

Figures and Prices.

			No. empoyed.	
Jhelum	...	...	40	Muhammadan.
Khusháb	...	...	10	Do.
Prang	...	...	28	Do.

The total for the province is 300 approximately. Prices for large boats, Rs. 200 to 600; small boats, Rs. 20.

Boats after the European fashion can be made to order at Jhelum, but the workmanship is rough and the cost great.

The trade, from the nature of things, is very languishing, as the competition of the Railway is gradually attracting all the carrying-trade. The artisans, however, have turned themselves to other branches of carpentering.

I.—Musical Instruments, &c.

Musical instruments.

52. An elaborate description of the various musical instruments in vogue in the Punjab, with details of their manufacture, &c., will be found in Baden-Powell's *Punjab Manufactures*, page 272. It will be sufficient to give their names here with the English equivalent when possible:—

1. *Sárangi* or fiddle.
2. *Tumbura* or guitar.
3. *Sitár*, a variety of No. 2.
4. *King*,
5. *Yaktára*, } One-stringed instruments.
6. *Sarod*,
7. *Rabáb*, } Six-stringed.
8. *Bansri*, bamboo flute.
9. *Bín*.
10. *Shurnaos*, or bagpipes.

The instruments and others which I have not mentioned are made by a special class of artisans. There are generally a few in each district, driving a desultory trade, and only making the instruments to order.

53. At Amritsar City 26 hands are employed, at Hoshiárpur 12, Moolтan 9, Bhera 6, Jullundur 3. The wood used is tún or walnut. The bodies of the instruments are made of the great gourd (*Cucurbita maxima*) and the bottle gourd (*Cucurbita lagenaria*). The prices vary according to the elaborateness of the instrument and the extent to which it is decorated. The wages are from 6 annas to 8 annas per day. The tools used are those of the ordinary carpenter, but capable of doing smaller and finer work. Of the annual outturn no reliable information is forthcoming. The industry is a scattered and straggling one.

Miscellaneous.

54. The information as to the miscellaneous branches of wood industry not treated of in the foregoing paragraphs is of the most meagre kind. Few of the district reports have any reference to them, and where such a reference is made the remarks are taken almost direct from Mr. Baden-Powell's work. Only a few of the most noteworthy can here be treated of.

1. Comb-making.

Five hundred and sixty-five workmen are employed. Their wages vary from $3\frac{1}{2}$ to 6 annas per day. The manufacture is chiefly carried on at Amritsar, Lahore, Dera Gházi Khan, and Shahpur. In Amritsar the trade is particularly brisk, owing to the demand for combs among the Sikh community; and 2,880 combs, valued at Rs. 75, are said to be turned out daily. The woods used are (kahu) wild olive and chikri, which are found locally, and the former is also imported from Kálábagh on the Indus, from Jhelum and Ráwalpindi, where it sells for 3 maunds per rupee. The only instruments required are a saw, a láthi, and cold chisel. A skilful workman can turn out 20 to 30 combs per day. These sell at prices varying from one pice for the ordinary kinds used by men to 2 annas for the more elaborate ones worn by women, which are often silvered over with the substance known as kallai. The wages vary from 3 to 5 annas per day. The annual outturn is valued at

3 lakhs of rupees per annum. This industry is generally worked by Hindu capitalists, who supply the raw material and dispose of the manufactured articles. The artisans are often hopelessly in debt to them.

2. Basket-making.

55. This is a scattered and straggling industry, occupying a large number of the menial classes, not regularly or permanently, but helping them in a desultory way to eke out a subsistence. The number of the workmen is returned as 3,261, but it is probably much more, and their principal castes are Chamárs, Sánsís, Baharupia, Musalís, and other waifs and strays on the outskirts of society. Baskets of the smaller kind (tokrís) are made from the cotton plant and from the twigs of the mulberry. The large round baskets known as 'kháris' are made from the tall strong grass called 'sarkána,' secured by thongs of leather or deer-skin. A very handsome kind is the large painted and box-shaped basket used in native houses to keep clothes and ornaments. These are generally made fast with thongs of leather, and cost as much as Re. 1 to Rs. 2. They are called 'toungs.'

Simla.

In the Simla Bazár, basket-making is carried on as a regular occupation, and 32 hands are permanently employed. They are paid at the rate of 5 annas a day, or rather their earnings come to that sum on the average. The ordinary menials employed on this work do not make more than $1\frac{1}{2}$ to $3\frac{1}{2}$ annas.

3. Pipe-stems.

56. The artificer of these is known as "nechaband," and is found in every town. The hollow bamboo is used for the stem and mouth, and the hollow reed (nari) for the tube which supports the chillum or bowl. The method of manufacture is described in *Punjab Manufactures*, page 302. Delhi and Amritsar are the places where the work is carried to the greatest perfection. In the former there are 19, and in the latter 27, Muhammadan tarkháns permanently employed, and they are said to earn 5 to 7 annas per day.

4. Walking-sticks.

57. Walking-sticks are made all over the province, the best at Bhera, Pákpattan, Hoshiárpur and Amritsar. The industry is not a special one, being carried on by the Lohárs and turners in wood. The sticks are frequently lacquered or ornamented with ivory. Bamboo and wild olive are the woods most commonly used. The latter takes varnish and lacquer best. The walking-sticks made at Bhera are fitted with a crutch of translucent stone resembling jade, said to be imported from Bokhára.

5. Cricketing apparatus —tennis, badminton and cricket bats.

58. This industry is rapidly growing with the increasing popularity of cricket all over the province. The most important centre of the industry is Siálkot. But in Amritsar, Gujrát and Ráwalpindi a trade is gradually springing up owing to the demand. At Siálkot 100 workmen are employed in 30 firms, and turn out tennis, badminton and cricket bats to the value of Rs. 15,000 annually, of which Rs. 10,000 is exported to other provinces, and Rs. 5,000 to the other districts of the Punjab. The trade is a most flourishing one, and the workmen earn 8 and 10 annas a day. The wood employed for the bats is walnut or ash, and for the stumps mulberry. Badminton bats sell from 8 annas to Re. 1-8-0, tennis bats from Re. 1-8-0 to Rs. 4, and cricket bats of seasoned walnut wood from Rs. 3 to Rs. 6. The Amritsar cricket bats are said to be the best, and there are now two firms in that city which turn out only cricket bats.

6. Saddle-trees.

59. These are made in every district, the wood and iron work being executed by the same person. From Miánwáli in Bannu, and Pindi Bhattián in Gujránwála, there is an export of these articles to the extent of Rs. 500, but the trade must suffer, as saddles of the English pattern displace those of native make. Farásh and kikar are the woods most commonly used.

7. Camel saddles.

60. The manufacture of these is carried to greater elaboration in Jhang and the Deraját, where camels are commonly used for riding. The wood employed is shisham; but this represents but a small proportion of the cost, as the saddle is decorated with brass

plates covered with delicate tracery, and the wood-work is inlaid with brass. Some of these saddles which are made to seat two persons cost as much as Rs. 100.

Miscellaneous articles.

61. Miscellaneous articles—such as toy-boxes, chessmen, pen-boxes, pencil-boxes, shuttle-cocks—are made generally throughout the province, and especially in the large cities—Lahore, Amritsar, Delhi and Mooltan—where there is a large and steady demand. They are mostly lacquered or inlaid, and so come within the scope of the lacquer-work, inlay and wood-turning that have been already described. Hoshiárpur and Pákpattan produce the best toys, and from the former city there is a considerable export down country.

Appendices.

62. Appendix I gives information as to different kinds of wood employed in the manufactures described, whether imported or grown locally, with the different uses to which they are put. Appendix No. II. gives, in a tabular form, the satistics for each district and division, so far as they could be compiled from the district reports.

M. F. O'DWYER,
Assistant Commissioner, Shahpur.

APPENDIX No. I.

WOOD.

ALPHABETICAL LIST OF TIMBER TREES.

[Stewart—*Punjab Plants.* Brandis—*Punjab Forest Flora, etc.*]

(*a*) TIMBER TREES.

Acacia Arabica (*Kikar*; in North-West Provinces, *babúl*). Found plentifully south of the Salt Range. Reaches 30 inches in girth in 10 or twelve years. Germinates easily. Sap wood liable to the attack of white ants. Heart wood less liable to attack of insects, is dark-colored reddish, hard, strong and heavy, weighing 70 lbs. per cubic foot green and 40 lbs. dry.
Use.—Much used for parts of boats, well-curbs, cart-axles and wheels, Persian wheels, sugar-rollers, the portion of the plough above the share, roofing, &c.

A. catechu (*Khair*) ... Found in the Sewáliks up to 3,000 feet. Timber dark colored, hard, heavy, brittle, and not liable to the attacks of insects.
Used for pestles, sugar-crushers, cotton-rollers, weavers' beams, shafts of ploughs, axles, &c.

A. modesta (*Phulái*) ... Indigenous in the Salt Range, the Bári and Jullundur Dóabs and in the north-west of the Province. Wood dark brown or nearly black, hard, strong and heavy, weighing 53½ lbs. cubic foot dry.
Used for cart-wheels, sugar-mills, Persian wheels, the mallets for cleaning cotton, &c.

A. speciosa (*Sirin, Siris Sirí*). Indigenous in the Himálaya from the Indus eastward. Cultivation on the plains probably introduced since the annexation. Is easily raised from seed, and grows much quicker than the shisham. Heart wood dark, heavy and strong; if properly seasoned will not warp or crack.
Used for ordinary constructive purposes (the Hindús in Kángra, however, consider it unlucky), for mortars, for oil-mills, for well-curbs, and for parts of boats, &c.

Acer cultratum (*Tilpattar*). Found in the Himálayas from 4,000 to 10,000 feet. Wood close grained and strong.
Used in Kángra for ploughs, bedsteads, and jámpán poles. (The maple is exported to Thibet.)

Aegle marmelos (*Bel*) ... Found below Simla up to 4,000 feet. Wood whitish, clean grained, hard and strong. (Sacred to Shiva.)
In Pesháwar snuff-boxes for Afgháns are made from the shell of the fruit.

Bassia latifolia (*Mahwa*) Found in the Sewáliks as far north as the Rávi. Wood cinnamon colored, close, hard, heavy and durable.
Used for building purposes in Kángra, &c.

Betula Bhojputra (*Bojputra, Bhuj*). Found in the Punjab Himálayas from 7,000 to 11,500 feet. Wood valueless.
Use.—The bark is exported to the plains for wrapping round Hooka tubes.

Bombax heptaphyllum (*Sembal*). Found throughout the Sewáliks up to 3,500 feet; moisture renders the wood more durable. Is used for well-curbs (nímchaks), conduits, troughs and bridges. Also is made into scabbards—Kángra and Yusafzai.

Capparis aphylla (*Karil*). Is characteristic of the Punjab, found in dry sandy tracts. Wood durable and bitter, said not to be attacked by white ants.
Used for fuel and the rafters of small buildings. Plough-shares are made of it in Dera Gházi Khan, and in Jhelum it is used for turning.

Cedrela toona (*Tun*) ... Found in the Sewáliks and also on the plains. Wood darkish, not subject to worm or warp, and takes a high polish. Much used by cabinet-makers. The hoop of sieves are made from C. T. var Serrata (*Daral*).

Cedrus deodara (*Diár*) ... Grows in many parts of the Himálayas from the Ganges to the Indus; also in the Saffed Koh. Probably is identical with the cedar of Lebanon. Found from 4,000 to 10,000 feet. Wood very durable, easily worked, of a yellowish color, straight grain, and highly resinous, which preserves it from the attacks of insects. Takes a high polish.
Use.—Universal. Cabinets, tables, roofing, doors, &c., are manufactured from it.

Conocarpus latifolia (*Dhau, chál*). Found in the Sewáliks up to the Rávi. Wood strong and durable.
Used for implements, beams, &c.

Dalbergia sissoo (*Táli, shisham, sissu*). Found in the Himálayas from 2,000 to 3,500 feet. Cultivated universally on the plains. Heart wood dark bay, hard and of great durability. Weight 68 lbs. per cubic foot green. Is not attacked by white ants.
Used for furniture, building boats, boxes, camel saddles, &c.

Elæodendron roxburghii (*Merandú*). Found in the Sewáliks up to the Rávi. Wood white and brittle.
Used for small wood-work.

Emblica officinalis (*Aoula*). In the Sewáliks up to 3,000 feet. Wood hard, strong, straight grained but brittle.
Used for gun-stocks, door-frames, well gear, &c.

Fluggea virosa (*Girk báta*). Found in the Sewáliks, Salt Range and Trans-Indus. Wood close grained and strong.
Used in the construction of the loom.

Fraxinus floribunda (*Súm hám sinnu*). Found sparingly on the plains. Wood possesses most of the qualities of the English Ash. Valued for jámpán poles, ploughs, platters, spinning-wheels, and in Kashmír is largely used to make oars.

Grewia elastica (*Dhaman*). Found in the Salt Range and Sewálik tract below Kángra; timber strong and elastic.
Uses.—Sticks, bows, bangi poles.

Juniperus excelsa (*Chalái skukpa*). Found in the Himálayas above 8,000 feet. Much used in Lahoul, Ladákh, &c., and is said to be in some request for boxes at Simla.

Lagerstraemia parviflora (*Bákli, dhaura*). Common in the Sewáliks. Its timber is yellowish, elastic and tough.
Used for agricultural implements, and in the North-Western Provinces for buggy shafts.

Mangifera indica (*Am; amb*). Is common up to Lahore; is also cultivated further north. Wood used for packing cases.

Michelia Champaca (*Champa*). Found in Kángra, Chumba, &c. Wood hard, takes a high polish, and is not subject to worms or liable to warp.
Used for furniture, verandah posts, &c., &c.

Morus alba (*Tútí, tút shahtút*). Found in the Himálayas up to 5,000 feet, also on the plains. Wood hard and strong
Used for construction, implements, and in carriage building.

Olea Europæa (*Kau, khan, khwán*). Abundant in the Trans-Indus, the Salt Range and the western part of the Sewálik tract; found also on the Chenáb, Rávi and Sutlej. Wood hard, strong and close grained.
Used for the cogs of wheels, agricultural implements, cotton, wheels, walking-sticks, in turnery and for combs.
Used also on the Indus for boats.

Ougeinia dalbergioides (*Sándan*).	Grows throughout the Sewáliks. Wood hard and strong, durable, and not subject to warping or to worms. *Used* for ploughs, wheels, sugar and cotton rollers combs, etc.
Pavia indica (*Bankhor, gúgú torjaga*).	Grows in the higher hills, Cis and Trans-Indus, up to 9,000 feet. Wood light colored and easily worked. *Used* for packing-cases, tubs, water-troughs, building purposes, and sometimes for furniture.
Pinus excelsa (*Kail*) ...	Found in the Himáláyas, also in the mountains Trans-Indus. Wood used for ordinary building purposes where deodar is scarce or dear. Exposure to much moisture causes it to decay rapidly.
Pinus longifolia (*Chil*).	Found in the Sewáliks, and also beyond the Indus. Timber resinous and strong, but not very durable. *Used* largely for building purposes.
Pistacia integerrima (*Khakkar, drek*).	Found from the Sutlej to the Indus up to 5,500 feet, also in the Salt Range. Its hard zebra wood makes handsome articles of furniture. In Kángra the wood is sometimes used for sugar-mills.
Quercus dilatata (*Parungi, Barám Moru*).	Abundant in the Punjab Himáláya from 4,500 to 9,000 feet. Timber is hard, heavy, durable, and used for ploughs, axe handles, house building, &c. (Q. *Semicarpifolia* has similar uses.)
Tamarindus Indica (*Imlí*).	Found about Delhi. Wood hard, heavy and strong. *Used* for naves, sugar and oil mills, &c.
Tamarix Orientalis (*Farásk*).	Grows commonly in the Punjab plains. Timber is coarse grained and heavy, weight 60 lbs. per cubic foot dry. In the Southern Punjab it is used for ploughs, Persian wheels and small rafters. In Sind the wood is employed in turnery.
Zizyphus jujuba (*Ber*) ...	Found throughout the Province. Wood tough, tolerably strong and durable. Used for well-curbs, Persian wheels, &c., and in ordinary construction work.

(*b*). Wood used in Turnery and for Combs, &c.

Acer cultratum	
Balanites Ægyptiacus (*Hingol*).	Found and used about Delhi.
Betula bhojputra	
Buxus sempervirens (*Chikni, chikri*).	Found on the Sutlej and Beás, in the Salt Range and round Punch. Wood very hard and durable.
Capparis aphylla..	Imported largely in Amritsar for combs, &c.
Crataeva religiosa (*Barna*).	Found in the Sewáliks and west as far as Jhelum. Wood soft and easily cut, but tough. *Used* for carving models, combs, &c.
Diospyros tomentosa (*Kinnu*).	Found in the Sewálik tract near the Rávi. Heart wood called ábnús (ebony) is fine, black, hard and brittle. It carves well; combs are made from it in Umballa. *Used* for ploughs, &c., in Kángra.
Flacourtia sapida (*Kangu, kukoa*).	Found in the lower hills and in the Salt Range. Wood close grained and hard. *Used* for combs and in turnery.
Fraxinus floribunda (*Súm*).	
Holarrhena antidysenterica (*Kawar, kúra*)..	Found in the Sewálik tract up to the Chenáb. Wood white, light and close grained. Is cut into spoons, combs, &c.
Juniperus excelsa, Morus serrata (*Tut*).	Common in many parts of the Punjab Himáláya. From 2,500 to 9,000 feet. Wood yellow and strong, but subject to the attacks of worms.
Olea Europæa (*Kau*)	*Used* for toys, &c.
Ongeinia dalbergioides	
Pavia indica.	
Pinus excelsa.	
Populus euphratica (*Safeida*).	Found in Sind, Mooltan and on the Indus as far as Attock. Wood soft, white, toughish. Heart wood of old trees dark and strong. In the Punjab it is used for wells.
Tamarix Orientalis.	
Wrightea mollissima (*Kilawa*).	Found in the Sewálik tract. Wood yellowish; white, light and soft. *Used* in Amritsar for combs.

(*c*) Used for Well Gear.

Acacia Arabica; A. speciosa, Bombax heptaphyllum, Butea Frondosa, Populus Euphratica, Sizygium jambolanum, Zizyphus jujuba.

(*d*). Used in Wheel Work.

Dalbergia sissu, Acacia Arabica, A. modesta, A. catechu, A. speciosa, Tamarindus Indica, Tamarix Indica, T. orientalis, &c.

APPENDIX No. II.

DERAJAT DIVISION NOTES.

Muzaffargarh.
Centres.—Kot Adú and Sítpur.
Manufactures noted.—Bows and arrows made of horn and bamboo.
State of trade.—Fair.

Dera Ghâzi Khan.
Centres.—Dera Ghâzi Khan, Jámpur and Rájanpur.
Manufactures noted.—Bed-legs, toys and boxes, spinning-wheels and combs.
State of trade.—Prosperous (especially the Bhattis and Chagathás).

Dera Ismail Khan.
Centres.—Dera Ismail Khan.
Manufactures noted.—Turnery.
State of trade.—Fair; wages high.

Bunnu.
Centres.—Edwardesabad, furniture; Kalabágh, boats; Miánwáli, saddle-frames; Kandian, musical instruments; Daud Khel, saddle-trees; Waha Khel, well gear.
Manufactures noted.—None.
State of trade.—Stationary.

Division.	District.	Work.	Caste.	Number employed.	Wages.	Amount of output.	Profit.	Place.
					R. a. R. a.	Rs.	Rs.	
Deraját ...	Muzaffargarh	Agriculture ...	Tarkhán	2,683	...	32,000	...	Muzaffargarh.
		Carriage-building.	Sikh ...	5	...	3,000	8 to 14%	
		Turnery ...	Muhammadan.	118	...	8,000	...	
		Kamárgin ...	...	20	...	1,500	...	
		Boat-building	...	20	...	3,000	...	
	D. G. Khan ...	Spinning-wheels.	...	11	0 8 to 1 4	2,660	...	D. G. Khan, Jámpur, Rájanpur.
		Sticks & toys.	...	25	...	...	...	
		Bed-legs and boxes.	...	39	...	12,000	...	
		Combs ...	...	33	...	4,000	...	
	D. I. Khan ...	Jugs, cups, &c.	Awans Syads.	313	...	...	...	
		Turnery ...	...	66	0 8 to 0 12	18,000	...	
	Bunnu ...	Agriculture...	Tarkhán	749	...	...	...	Edwardesabad, Kálabágh, Mianwáli.
		Furniture ...	Sikh ...	7	...	...	...	
		Boat-building.	...	76	0 4 to 1 0	...	...	
		Bed-legs, &c.	...	143	...	...	...	
		Musical Instruments.	...	6	...	...	...	
		Combs ...	...	26	...	...	...	

TABLE OF EXPORTS AND IMPORTS, AMOUNT OF RAW MATERIAL, &c.

District.	Exports.			Imports.				
	Articles.	Place.	Amount.	Articles.	Place.	Amount.	Raw material.	Octroi.
			Rs.			Rs.	Rs.	
Muzaffargarh	English furniture.	D. G. Khan ...	150	Bed-legs and furniture.	Sakhar ...	500	27,000	...
	Turnery ...	...	1,000	Miscellaneous.	...	1,000	...	...
				Timber.	...	4,412	...	...
D. I. Khan ...	Turnery ...	Dists. Punjab	4,600	Miscellaneous.	England	1,000	5,000	...
		Kábul ...	2,000	...	Punjab...	3,000	...	...
D. G. Khan ...	...	None.	...	...	None.	...	18,660	...
Bannu ...	Furniture ...	Frontier ...	300	Timber.	...	300	19,665	...
				Pen-boxes.	Delhi ...	75	...	...

APPENDIX No. II—*continued.*

PESHAWAR DIVISION NOTES.

Pesháwar

(1) *Centres.*—Pesháwar—Fans and trellis-work.
Prang ... } Boats.
Chársadda ... }

(2) *Manufactures noted.*—The trellis-work made at Pesháwar is of "exceptional fineness and delicacy"; fans with lacquered handles are made in great quantities for export.

(3) *State of the trade.*—Wages high; Pinjra trade languishing; turners and boat-builders fairly prosperous.

Kohát

(1) *Centre.*—Kohát. Olive walking-sticks, and belnas wood-work (kunda) and guns.

(2) *Manufactures noted.*—None.

(3) *State of trade.*—Wages high; trade stationary.

Hazára

(1) *Centres.*—Maira ... } Sanak, kulfis, chilams.
Mansehra ... }

(2) *Manufactures noted.*—Sanaks, large wooden plates for kneading flour; kulfis; cups in which the kneaded flour is kept.

(3) *State of the trade*—No information.

TABLES FOR THE PESHAWAR DIVISION.

District.	Work.	Caste.	Number employed.	Wages.	Amount of output.	Profits, &c.	Places noted, &c.
				R. a. R. a.	Rs.		
Pesháwar ...	Total ...	Awán Hindki	1,771	...	1,84,420	...	Total for district Pesháwar (Chársada).
	Pinjra, &c. ...	...	160	0 12 to 1 0	2,500		
	Carriage-building.	Sikh ...	15	0 12 to 0 14	...	...	...
	Boat-building	Awán Hindki	28	...	3,600	10%	Chársada Prang.
	Turnery ...	...	120	0 8 to 0 12	1,000	...	...
	Walking-sticks, boxes and fan handles.	...	60	0 6 to 0 10	30,000	...	...
Kohát ...	Total ...	...	...	...	...	...	...
	Belnás ...	...	4	0 3 to 0 4 (agriculture)	300	25%	Kohát.
	Walking-sticks	...	10	0 5 to 0 9	200		
	Turnery ...	...	5	0 10 to 1 0	200		
Hazára ...	Total ...	...	...	0 6 to 0 8			
	Sanaks kulfis	...	No returns.		...	...	Maira and Mansehra.

PRICES.

Boats ... Rs. 200 to 800; Pinjra Rs. 2-5 per square foot; carved wood Rs. 3 per cubic foot.

Bed-posts ... „ 1-8 to 2; chirkás Rs. 2; sticks As. 1½ to As. 4; belnás As. 5.

TABLE OF EXPORTS AND IMPORTS, AMOUNT OF RAW MATERIAL, &c.

District.	Exports.			Imports.			Raw material.	Octroi.
	Articles.	Place.	Amount.	Place.	Articles.	Amount.		
			Rs.			Rs.		
Pesháwar ...	Fans ...	Kohát ...	100	Independent territory.	Wood ...	80,000	74,000	3·2%
	Sanaks, pinjra	Kábul, Ráwalpindi, Lahore, &c.	9,000	Saharanpur, Calcutta, Bombay.	Cups, toys, &c.	3,500		
				Other Districts	...	500		
		Total ...	9,100			4,000		
Kohát ...	Belnás ...	Independent territory.	150	Tirah ...	Wood ...	9,214		
				Kábul and Kurram.	...	3,827		
				Bannu ...	Bed-legs	...		
				Pesháwar ...	Fans.	...		
				Hazára ...	Sanaks ...	100		
		Total ...	150			100		
Hazára ...	Sanaks ...	Kohát ...	...	Pind Dádan Khan.	Bed-legs and Chairs.	No	figures	given.
				Hoshiárpur ...				
				Kartárpur ...				

APPENDIX No. II—*continued.*

JULLUNDUR DIVISION.

NOTES.

Jullundur.

Centres.—Núrmahal—Architecture and wood-carving.
Jullundur ... } Turnery and furniture turned out in great quantities.
Kartárpur ... }
Manufactures noted.—Turnery, but is not of high artistic value. Kartárpur furniture largely exported to other districts, and is noted for its cheapness.
State of the trade.—Fair. Turners well off.

Ferozepore.

Centres.—Ferozepore. Furniture and turnery.
Manufactures noted.—One turner's work is well known.
State of trade.

Hoshiárpur.

Centres.—Hoshiárpur—Turnery, inlaid-work, and furniture.
Basi Ghulám Hosain—Furniture and inlaid-work.
Piplánwála, Bahádarpur (Mukerián, Urmar, Tandá)—Bed-legs.
Dasúya, umbrellas; Bathullas, drums (dhols); Miáni, cart-wheels; Unah baskets.
Manufactures noted.—Furniture, inlaid-work and turnery.
State of trade.—Timber trade and the turners flourishing.

Ludhiána.

Centres.—None.
Manufactures noted.—None.
State of trade.—Workmen fairly well off.

TABLES OF THE JULLUNDUR DIVISION.

Division.	District.	Work.	Caste.	Number employed.	Wages.	Amount.	Profit.	Place.
					R. a. R. a.	Rs.		
Jullundur ...	Jullundur ...	Persian wheels	...	44	0 5 to 0 6	2,820	25 %	Kartárpur.
		English carriages.	...	23	0 8 to 0 12	5,000		
		Wheels ...	...	100	...	20,280		
		Ekkás ...	...	6	...	2,550		
		Furniture ...	...	57	...	7,360		
		Turnery ...	...	285	...	33,653		
		Boxes ...	...	16	...	780		
		Musical Instruments. ...	...	3	...	150		
	Ferozepore ...	Agriculture ...	...	670	...	...	...	Ferozepore.
		Cotton-cleaning Machines.	...	105	...	...		
		Architecture and Carriage-building.	Sikh ...	412	...	...		
			Muham.	5	...	...		
		Furniture ...	...	204	...	...		
		Spinning-wheels.	...	150	...	...		
		Boat-building	...	47	...	...		
	Hoshiárpur ...	Agricultural	Tarkháns, Dumnah	5,186	0 2½	5,43,129	...	Hoshiárpur.
		Architecture	Jhiwar, Rájpút.	45	0 6 to 0 8	53,438		
		Carriage-building.	Gharu ...	69	0 6	14,529		
		Furniture ...	...	106	...	18,132		
		Turnery ...	...	309	0 6 to 0 8	46,728		
		Kamángiri ...	...	13	0 6 to 0 8	1,671		
		Baskets ...	Chamár, Rám Dásia	608	2½	49,195		
		Toys, boxes, &c.	...	63	4½	10,340		
		Combs ...	...	8	2½	537		
		Musical Instruments.	...	12	0·5 to 0 6	2,779		

APPENDIX No. II—*continued.*

JULLUNDUR DIVISION—*concluded.*

TABLES—*concluded.*

Division.	District.	Work.	Caste.	Number employed.	Wages.	Amount.	Profit.	Place.
					R. a. R. a.	Rs.		
Jullundur ...	Ludhiána ...	Agriculture ...	...	3,791	....	...	...	...
		Architecture	...	15	0 12 to 1 0	4,000	...	...
		Door-frames ...	Sikhs	86	...	51,000	...	...
		Native carriages.	Sheikhs, Patháns	126	0 8	16,700	...	...
		Turnery ...	...	27	0 6 to 0 7	3,100	...	...
		Baskets ...	Bhanjárás	28	0 4	3,000	...	...
		Boxes, &c. ...	...	...	...	2,000	...	...
	Kángra							

TABLE OF PRICES.

Work.	Jullundur.	Ferozepore.	Hoshiárpur.	Ludhiána.	Kángra.
	Rs. a. Rs. a.	Rs. a. Rs. a.	Rs. a. Rs. a.	Rs. a. Rs. a.	
			Inlaid.		
Almirás ...	20 0 to 30 0	...	4 0 to 80 0	...	
Office desks ...	20 0 to 25 0	...	...	...	
Chest-of-drawers.	20 0 to 25 0	...	...	...	
Dining-tables	30 0 to 50 0	...	...	5 0 to 30 0	
Ornamental tables.	15 0 to 20 0	...	1 0 to 28 0	...	
Screens ...	20 0	...	...	...	
Boxes ...	2 0	...	1 8 to 70 0	...	
Chairs ...	...	2 8 to 3 0	5 0 to 40 0	3 0 to 5 0	
Chaukís ...	...	...	8 0 to 32 0	1 0 to 2 0	
Pen-boxes ...	0 8 to 1 8	...	1 0 to 10 0	...	
Suráhís ...	...	...	0 8 to 5 0	...	
Dabbás ...	...	...	1 0 to 2 0	...	
Guldán ...	...	...	1 0 to 5 0	...	
Bed-legs ...	1 0 to 5 0	...	2 0 to 8 0	4 0 to 10 0	
Carts ...	...	50 0 to 100 0	...	40 0 to 80 0	
Ekkás ...	...	25 0 to 50 0	...	...	
Chejgári ...	...	...	...	350 0	
Shigrams ...	...	...	...	250 0 to 300 0	
Dog-carts ...	...	...	...	100 0 to 150 0	
Carved door-frames.	...	...	80 0 to 150 0	50 0 to 80 0	
Cart-wheels ...	...	...	...	5 0 to 15 0	

TABLE OF EXPORTS AND IMPORTS, AMOUNT OF RAW MATERIALS, &c.

District.	Exports.			Imports.				
	Work.	Place.	Amount.	Work.	Place.	Amount.	Raw material.	Octroi.
			Rs.			Rs.	Rs.	
Jullundur ...	Turnery ...	Delhi ..., Ludhiána, Amritsar, Lahore ...	16,183	Pen-boxes ...	Bombay ...	3,000	1,06,000	
	Miscellaneous	...	3,670	Boxes, small ...	...	3,200	...	
				Boxes, large ..	...	7,800	...	
				Furniture, &c.	Hoshiárpur	39,630	...	
				Combs, &c. ...	Amritsar ...	732	...	
				Wood	Hoshiárpur, Gujránwála, Kángra ..., Patiála ...	85,850	...	
Ferozepore ...	...	...	...	Wood ...	Jhelum ...	...	...	
Hoshiárpur ...	Turnery ...	Punjab, generally.	24,125	...	Kángra ...	...	5,90,000	
	Furniture ...	...	9,848	Sticks ...	Umballa ...	2,000	...	
	Timber ...	...	2,97,000	...	Delhi ...	...	...	
	Toys, &c. ...	Bombay ...	10,682	...	...	...	...	
	Inlaid furniture.	„ Calcutta, &c.	5,533	...	...	...	...	
Ludhiána ...	Boxes, toys, &c.	Hoshiárpur ..., Delhi ..., Jullundur ...	2,500	Timber	Hoshiárpur, Umballa, &c., Phillour ...	70,000	...	

APPENDIX No. II—*continued.*

LAHORE DIVISION.

NOTES.

Lahore. Tarkháns prosperous and thrifty. Are buying land.
Centres.—Lahore. Noted for furniture and carriage-building. (There is one European firm of coach-builders).
There is a School of Art here, which does useful work, &c.

Amritsar. *Centres.*—Amritsar, for combs, musical instruments, &c.
Batála, for architecture wood-work.
Jhandiála. Ekka wheels.
Tarkháns generally prosperous. Certain branches of the trade, *e. g.*, wood-carving, kamángiri, &c., on the decline.
A Technical School at Amritsar for instruction in wood-carving.

Gurdáspur. *Centres.*—Gurdáspur. Agriculture machines (oil-mills, &c.).
Manufactures noted.—None.
State of trade.—Wood-dealers fairly prosperous; Tarkháns poorly off.

Mooltan. *Centres.*—Mooltán.
Manufactures noted.—None.
Trade languishing, and Tarkháns badly off.

Jhang. *Centres.*—Kot Isa Shah and Ahmadpur for turnery.
Chiníot. Carving, &c.
Manufactures noted.—Turnery and wood-carving, and camel-litters.
State of trade.—Workers in these branches thriving.

Montgomery. *Centres.*—Pákpattan and Dipálpur. Turnery, &c.
Manufactures noted.—Turnery.
State of trade.—Lacquer-workers flourishing; other branches of the trade languishing.

TABLE OF THE LAHORE DIVISION.

District.	Work.	Caste.	Number employed.	Wages.	Outturn.	Profits.	Centres, &c.
				Rs. a. Rs. a.	Rs.		
Lahore ...	Agricultural	Sikh, Arora ...	2,100	...	1,00,000		
	Architectural	Tarkhán ...	500	...	1,40,000		
	Turnery ...	...	300	...	36,000		
	Kamángiri ...	Kamángar ...	30	0 8 to 1 0	5,600		
	Carriages (English) and Furniture.	...	100	...	18,000	10%	Lahore.
	Comb-makers	...	100	...	3,600		
	Wood-dealers	Khatri, &c. ...	50	...	...		
	Railway Works	...	2,000	...	...		
Amritsar ...	Agricultural	Sikh ...	600	0 5 to 7 0			
	Architectural	...	1,300	0 10 to 0 14			
	Carriage and Furniture.	...	40	0 8 to 0 10	2,40,000	15%	Amritsar. Batála. Jandiála.
	Turnery ...	...	100	0 4 to 0 6			
	Combs ...	...	150	0 3 to 0 6			
	Musical Instruments.	...	26	0 4 to 0 14			
	Cricket-gear	...	6	...			
			H. M.				
Gurdáspur ...	Agricultural	Ansan, Bhatti	2,128 1,099	...			
	Architectural	...	581 125	0 7 to 0 8			
	Carriage-building.	Saprah, &c....	22 0	...	...	...	Gurdáspur.
	Turnery and Furniture.	...	676 71	0 4 to 0 8			
	Combs ...	...	112 0	...			
	Shuttle-cocks	...	5 0	...			
Mooltan ...	Agricultural	Sikh, Janjua	1,300	...			
	Architectural	Khokhar, Bhatti	200	0 7 to 1 0			
	Furniture, &c.	...	125	...	65,000	...	Mooltan.
	Turnery ...	...	70	...			
	Combs ...	...	25	...			

APPENDIX No. II—*continued.*

LAHORE DIVISION—*concluded.*

TABLES—*concluded.*

District.	Work.	Caste.	Number employed.	Wages.	Outturn.	Profits.	Centres, &c.
				Rs. a. Rs. a.	Rs.		
Jhang ...	Turnery ...	...	49	0 7 to 0 8	...	...	...
Montgomery...	Agricultural	Sikh ...	947	...	...	...	...
	Architectural	Dhaman ...	35	...	...	...	...
	Carriage and Furniture.	Khokkar ...	52	0 8 to 0 10	...	...	...
	Turnery ...	Siawán ...	122	0 8 to 0 12	...	...	...
	Boat-building	...	2	...	...	...	...

TABLE OF PRICES.

Work.	Lahore.	Amritsar.	Gurdáspur.	Mooltan.	Jhang.	Montgomery.	
	Rs. a. Rs. a.	Rs. a. Rs. a.	Rs. a. p. Rs. a.	Rs. a. Rs. a.	Rs.	Rs. a.	
Well-gear ...	40 0 to 50 0	...	51 0 0 ...	25 0 to 45 0	...	30 0	
Sugar-mills	...	...	45 0 0 ...	...	...	...	
Oil-mills ...	...	...	8 0 0 ...	...	...	...	
Flour-mills	...	...	...	...	...	80 0	
Dog-carts ...	160 0 to 300 0	80 0 ...	110 0 0 ...	...	...	4 0%	Toys.
Phaetons ...	400 0 ...	300 0 to 400 0	...	...	...	1 0	Goblets.
Shigrams ...	...	175 0 ...	300 0 0 ...	...	...	1 0	Flower-holder.
Ekkás ...	20 0 ...	30 0 ...	25 0 0 ...	...	...	0 8	Candle-holders.
Ekka-wheels	...	9 0 per pair	...	...	...	1 0	Chessmen.
Chairs ...	From 1 12	From 2 0	...	...	...	...	
Tables ...	4 0 to 30 0	...	...	...	...	...	
Almirás ...	From 8 0	...	...	...	...	...	
Bed-legs ...	1 0 to 1 8	...	0 12 0 to 4 0	2 0 to 10 0	...	4 0	
Pirás ...	...	...	...	...	...	From 1 0	
Chirkhás ...	1 0 to 2 8	...	0 12 0 to 5 0	...	...	4 0	
Boxes ...	0 8 to 10 0	...	...	0 4 to 2 0	Camel-litter 100	From 0 4	
Door-frames	...	...	15 0 0 to 80 0	...	74	...	
Báris ...	...	...	8 0 0 to 25 0	...	96	...	
Combs ...	...	15 %	0 0 3 to 0 2	0 13 to 1 8%	...	...	
Baskets ...	...	...	0 0 6 to 0 2	...	...	...	
Hooka stems	...	...	...	Bows 0 8 Lances 1 0 to 3 0	...	...	
Boats ...	400 0	...	270 0	...	...	400 0	
Bansrís ...	...	...	...	...	...	...	
Baskets ...	...	...	...	...	...	...	
Shuttle-cocks	...	...	0 4 0 to 0 8 a dozen	...	...	...	
Cricket-gear	...	9 0 a set	...	...	...	...	

TABLE OF EXPORTS AND IMPORTS.

District.	Exports.			Imports.			
	Work.	Place.	Amount.	Work.	Place.	Amount.	Raw material used.
			Rs.			Rs.	Rs.
Lahore ...	Boats ...	Sukkur ...	...	Chairs ...	Kartárpur ...	1,200	...
				Deodár-Chíl	Kashmír ...	10,000	...
				Fans ...	Pesháwar ...	...	...
Amritsar ...	Combs ...	Punjab ...	1,00,000	...	...	...	...
	Flutes, &c. ... Ekkás.	...	...	Deodár and Chíl.	Kashmír, &c.	1,50,000	3,35,000
Gurdáspur ...	Combs ...	Neighbouring districts.	...	Furniture...	Lahore. Kartárpur.		
			Total 5,000			Total 75,000	...
	Shísham, Tún, &c.	Lahore ... Amritsar ...	40,000	Foreign woods.	Kashmír, Amritsar, &c.	25,000	...
Mooltan ...	...	...	...	Deodár ...	Wazírabád, Jhelum.	10,000	...
	None ...	...	...	Shísham ...	...	300	...
				Boxes, Sandals.	Chiniot ...	200	45,000
Jhang ...	Lacquered work to neighbouring districts.			Deodár ...	...	...	12,500
Montgomery...	No information.						

APPENDIX No. II—*continued.*

RAWALPINDI DIVISION.

NOTES.

District Ráwalpindi.

1. *Centres.*—Ráwalpindi. Furniture and carriage-building.
   Alipur, Iklás, Fatehjang, Attock } Native furniture.
   Attock, Pindigheb } Boat-building.
2. *Manufactures noted.*—None.
3. *State of trade.*—All sections of the Tarkhán class badly off. Timber trade stationary.

District Jhelum.

1. *Centres.*—Jhelum, Pind Dádan Khan } Boat-building.
   Dhaniyála. Combs made of phulao.
2. *Manufactures noted.*—None. The Jhelum and Pind Dádan Khan boats formerly celebrated.
3. *State of trade.*—Comb-makers and shuttle-makers fairly well off. Boat-building trade languishing. Timber trade diminishing.

District Shahpur.

1. *Centres.*—Bhera, Alipur Saiyadán, Girot, Jaura } Wood-carving.
   Khusháb. Boat-building.
   Sáhiwál. Turnery.
   Núrpur. Combs.
2. *Manufactures noted.*—Bhera wood-work, Sáhiwál turnery, Núrpur combs.
3. *State of trade.*—Wood-carving and boat-building, the latter is languishing. Sáhiwál turners and Núrpur comb manufacturers in a prosperous condition.

District Gujrát.

1. *Centres.*—Gujrát. Furniture.
   Khárián. Hooka stems.
2. *Manufactures noted.*—Gujrát camp and easy-chairs. This trade capable of indefinite extension. Chairs turned out said to be yearly deteriorating in quality.
3. *State of trade.*—Timber trade fairly prosperous. Wood carving on the decline. Furniture trade stationary.

District Siálkot.

1. *Centres.*—Siálkot. Tennis bats, pinjra work, spear-shafts, coach-building, panels, &c.
   Gházipur, Dalowáli } Country carts.
   Gariwál. Cart-wheels.
   Bajra. Turnery.
   Sandhánwála. Combs and chaukats.
2. *Manufactures noted.*—Siálkot tennis bats, and spear-shafts painted on metallic ground and varnished.
3. *State of trade.*—Turnery, comb-making, coach-building, flourishing. Timber trade increasing. In this trade there are 250 traders, representing Rs. 2,00,000 capital. Wood-carving on the decline.

District Gujránwála.

1. *Centres.*—Wazirabad. Boat-building.
2. *Manufactures noted.*—None.
3. *State of trade.*—Wood-carving on the decline. The comb trade, which employs 30 hands, thriving. Wood used in the comb trade—kuril, chikri (imported from the Central Provinces), van (imported from Kashmír), safeida (from Punch), and kan (olive) (from Rawalpindi).

TABLES OF THE RAWALPINDI DIVISION.

District.	Work.	Caste.	Number.	Wages.	Amount of outturn.	Profits, &c.	Remarks: places.
				R. a. R. a.	Rs.		
Ráwalpindi ...	Total ...	Arora Awán	5,500	0 4 to 0 12	4,33,598	25	Boats, Attock.
	Furniture ...	...	40				
Jhelum ...	Wood-carving	...	60	0 7 to 0 8	...	...	
	Furniture ...	...	15	0 6 to 0 8	1,000	...	
	Carts ...	...	6	0 4	250	...	
	Turnery ...	...	100	0 4 to 0 6	10,000	...	
	Boat-building	Gharás ...	40	0 4	4,000	...	Jhelum, Pind Dádan Khan.
	Shuttles ...	...	...	0 4	1,000	...	
	Total ...		Unknown				

APPENDIX No. II—*continued.*

RAWALPINDI DIVISION—*continued.*

TABLES—*continued.*

District.	Work.	Caste.	Number employed.	Wages.	Amount of outturn.	Profits, &c.	Remarks: places.
				R. a. R. a.			
Shahpur ...	Wood-carving	Chohán Rájpút.	80	0 8 to 0 12	16,000	...	Bhera.
	Furniture ...	Muhammadan Tarkháns.	65	0 4 to 0 8	8,000	...	
	Turnery ...	Janjua, Khokhar, &c.	75	...	8,000	...	Sáhiwál.
	Boat-building	...	10	0 4 to 0 8	1,100	Average 25 %	
	Basket-work	...	24	...	3,600	...	
	Musical Instruments.	...	6	...	900	...	
	Combs ...	...	68	...	9,000	...	Núrpur.
	Total ...	...	2,534	...	1,40,919	...	
Gujrát ...	Wood-carving	Bhatwál Bhatti	215	0 8	2,500	Profit 12 %	
	Furniture ...	...	44	0 4 to 0 12	4,185	Chairs	Gujrát.
	Turnery ...	...	145	0 4	5,590	Bed-legs.	Khárián, for Hooka pipes.
	Basket-work	Bhairupia, Sikhs, Mussallís.	232	0 3	2,200		
	Total ...	...	...	...	...		
Siálkot ...	Wood-carving	Dháman, &c.	300	0 8 to 0 10	...	Profit 8 to 15 %	
	Turnery ...	...	250	0 5 to 0 7	...		
	Baskets	Barwála ... Megh ... Batwál ...	2,000	0 2 to 0 3	...	...	Siálkot.
	Combs ...	...	100	0 5 to 0 8	...		
	Tennis bats...	...	100	0 8 to 0 10	5,000		
	Total ...	...	4,968	...	2,73,983		
Gujránwála ...	Inlaid-work; Wood-carving.	...	...	...	20,000		
	Turnery ...	...	...	...	80,000	...	Gujránwála.
	Total ...	...	3,815	...	2,57,000		

TABLE OF PRICES.

Articles.	Ráwalpindi.	Jhelum.	Shahpur.	Gujrát.	Siálkot.	Gujránwála.
	Rs. a. Rs. a.		Rs. a. Rs. a.	R. a. R. a. (Wood supplied)	Rs. a.	Rs. a. Rs. a.
Well gear ...	...	...	45 0	16 0 to 20 0	45 0	18 0 and upwards.
Sugar Press	...	...	...	...	50 0	...
Oil Press ...	...	...	...	...	10 0	...
Flour Mill...	...	...	...	...	...	...
Dog-cart ...	200	...	80 0 to 150 0	...	...	...
Phaetons ...	500	...	...	...	...	...
Wagonettes	400	...	...	...	...	...
Carts ...	...	...	...	...	...	...
Ekkas ...	...	...	25 0. Usually imported from Amritsar.	...	...	20 0 to 25 0 ...
Chairs ...	3 0 to 10 0	...	...	3 0 to 24 0	...	...

APPENDIX No. II—*concluded.*

RAWALPINDI DIVISION—*concluded.*

TABLES—*concluded.*

Articles.	Ráwalpindi.	Jhelum.	Shahpur.	Gujrát.	Siálkot.	Gujránwála.
	Rs. a. Rs. a.	Rs. a. Rs. a.	Rs. a. Rs. a.	Rs. a. Rs. a.	Rs. a. Rs. a.	Rs. a. Rs. a.
Tables ...	...	...	Lacquered teapoy 8 0	...	...	...
Almirahs ...	10 0 to 50 0	...	...	...	...	...
Bed-legs ...	2 0 to 8 0	4 0 to 5 0	1 0 to 10 0	0 6 to 2 0	...	0 12 to 1 4
Pírás ...	3 0 to 5 0	...	3 0 to 4 0	0 8 to 3 0	...	...
Charkhás ...	2 0	2 8 to 3 0	2 0 to 7 0	...	...	...
Boxes ...	4 0 to 20 0	2 0 to 3 0	0 8 to 2 0	1 8	...	4 0 to 5 0
Door-frames	...	...	1 4 to 5 0	1 4 to 5 0	...	...
Doors ...	...	...	2 0 to 4 0	2 0 to 4 0	...	...
Combs ...	...	...	0 ½ to 0 2	...	...	...
Baskets ...	...	...	0-0-2 to 0 3	0-0-6 to 0 1	...	...
Tennis bats	...	...	...	...	1 8 to 3 0	...
Lance shafts	...	...	...	...	3 0 etc.	...
Boats ...	...	230 0 to 425 0	250 0	...	...	...
Toys ...	...	...	0 12 to 1 8 per dozen.	...	...	...
Hooka stems	...	...	...	...	...	0 2 and upwards.

TABLE OF EXPORTS AND IMPORTS, &c.

Exports.				Imports.			
District.	Work.	Place.	Amount.	Work.	Place.	Amount.	Raw Material.
			Rs.			Rs.	
Ráwalpindi, Octroi Rs. 3-2%	...	...		Qalamdáns ...	Hoshiárpur ...	...	...
				Deodár and Chíl.	Kashmír ..	1,00,000	...
				Chairs ...	Kartárpur ...	...	...
				Fans ...	Pesháwar ...	...	...
Jhelum ...	Deodár ...	Places on the Jhelum.	...	Kau-wood ...	Kashmír ...	...	8,400
				Phulan ...	Pesháwar ...	...	...
Shahpur, Octroi Rs. 6½%	Combs ...	Mooltan, &c.	7,500	Toys ...	Hoshiárpur....	500	10,000
	Lacquered-ware Bed-legs ...	...	7,000	Deodár ...	Jhelum ...	3,500	...
				Furniture ...	Gujrát ...	500	...
Gujrát ...	Chairs ...	Lahore, Pindi, &c.	2,776	Timber ...	Wazírabad ... Jhelum ...	...	9,500
				Chaukats ... Bed-legs ...	Batála ...	2,328	...
Siálkot ...	Tennis bats ... Spear-shafts.	Punjab ...	5,000	Tun chairs ...	Hoshiárpur ...	5,000	...
				Shisham chairs	Gujrát ...	...	...
Gujránwála ...	...	...	...	Wood ...	Wazírabad, Kashmír, &c.	2,17,000	3,50,000

DELHI DIVISION.

District.	Description.	Number.	Hindu.	Muhammadan.	Factories.	Wages.	Out-turn.	Exports.	Imports.	Remarks.
DELHI.						Rs. a. Rs. a.				
	Agricultural Implements	...	...	...	...	...	...	...	...	Tassu 8 = inches 11.
	Architectural	4	...	...	1	0 12 to 1 0	...	...	...	*Prices.* Rs. a.
		70	...	...	10	...	...	...	...	
	Carriage-building. English ...	Phaeton 15	...	...	2	...	...	...	...	Rath ... 200 0
	Carriage-building. Native	Raths 20	...	...	8	...	...	...	...	Majholi ... 80 0
		Carts, 1,200	...	(3)	70	...	...	...	...	Cart ... 60 0
	Furniture English ..	15	...	15	3	...	...	...	...	Chair ... 4 8
										Table ... 5 8
										Bed-legs ... 1 8
	Furniture Native ...	...	...	..	...	...	...	...	...	Pírás ... 1 0
	Turnery and Kamángiri,	...	...	...	...	...	...	...	...	Boxes ... 2 0 to 10 0
	Boat-building ...	25	Kahárs Chamárs	...	3	0 7 to 0 12	...	...	...	
	Basket-making ...	...	...	...	...	...	...	...	...	
	Miscellaneous, sticks and toys.	...	...	...	...	...	...	...	...	Price of woods, see report.
	Shoe lasts ...	60	...	60	4	...	...	...	...	
		55	...	55	20	...	...	...	...	
	Boxes, bed-legs ...	19	...	19	10	0 7 to 0 10	...	...	...	
	Hooka stems, &c. ...	...	...	...	...	...	...	...	...	
	Musical Instruments ...	...	...	...	...	...	...	...	...	
	Shuttles ...	11	Sikhs 11	...	5	...	...	...	...	
	Combs ...	...	...	...	...	...	...	...	...	
GURGAON.		Including native furniture, wood-work.								
	Agricultural Implements	1,775	1,775	...	775	4 annas to 8 annas per diem.	...	...	...	
	Architectural ...	...	...	...	...		...	...	...	
	Carriage-building. English ...	...	...	...	...		...	...	...	
	Carriage-building. Native ...	Rath ... 25	25	...	9		...	...	...	
	Furniture ... English ...	20	20	...	8		...	...	...	
	Furniture ... Native ...	Beads 10 7	10	7	4		...	...	...	
	Turnery and Kamángiri,	...	...	...	...		...	...	...	
	Boat-building ...	...	...	...	...		...	...	...	
	Basket-making ...	...	...	...	...		...	...	...	
	Miscellaneous, sticks and toys.	...	...	...	...		...	...	...	
	Shoe lasts ...	...	...	...	...		...	...	...	
	Boxes, bed-legs ...	2	2	...	2		...	...	...	
	Hooka stems, &c. ...	...	...	...	...		...	...	...	
	Musical Instruments ...	...	...	...	...		...	...	...	
	Shuttles ...	...	...	...	...		...	...	...	
	Combs ...	...	...	...	...		...	...	...	

Sugar-mills ...	90	...	90	16	Totalraw material 50,000.	Out turn 1,5 0,000.	Profits 12 per cent.
Thelás ...	36	36	...	16	*Castes—*	*Castes—*	
Camel carts ...	15	...	...	3	Sheiks, Patháns 283	Khati ... 1,817	
Nalki ...	8-8	...	...	2	Khatrís ... 794 (thriving).	Lohárs ... 4	
Pattern-making	32	...	...	16	Sikhs ... 11	Muhammadans 36	
Timber merchant ...	...	...	...	16	Kahars ... 15		
Chick, &c. ...	...	...	...	32	Chamárs ... 10	1,857	
Total			...	1,[illegible]90	1,113		

Carts at Nahrpur, Kankrola, &c.
Raths at Rámpur, Rewári, Gokalgarh, Palwal, &c.
Charkhás, Pírás } Ferozepore.

DELHI DIVISION—*continued.*

District.	Description.	Number.	Hindu.	Muhammadan.	Factories.	Wages.	Outturn.	Exports.	Imports.	Remarks.
KARNAL.	Agricultural Implements	1,687	...	...	...	From 6 annas to 1 rupee.	...	...	...	
	Architectural ...	...	...	...	...		...	...	...	
	Carriage-building. English	...	...	..	...		...	...	...	
	Carriage-building. Native	3	3	...	1		...	...	...	
	Furniture ... English	4	...	4	1		...	...	...	
	Furniture ... Native	...	...	...	...		...	...	...	
	Turnery and Kamángiri	...	...	...	...		...	...	...	
	Boat-building ...	...	...	...	...		...	...	...	
	Basket-making ...	...	...	...	...		...	...	...	
	Miscellaneous, sticks and toys.	...	...	...	...		...	...	...	
	Shoe lasts ...	...	...	...	...		...	...	...	*Imports.* Rs. Delhi ... 2,500 Other places ... 500 3,000 Jaipur .. 500 Meerut ... 100 Bijnour ... 1,000 1,600 Total ... 4,600
	Boxes, bed-legs ...	15	...	15	4		...	...	...	
	Hooka stems, &c. ...	...	...	...	...		...	...	...	
	Musical Instruments ...	...	...	...	...		...	...	...	
	Shuttles ...	...	...	...	...		...	...	...	
	Combs ...	...	...	...	...		...	...	...	
HISSAR.	Agricultural Implements	1,662 102	1,321 Sikh 102	341	...	Rs. a.	...	...	...	Rs. a. Rs. a. Chirkha 0 8 to 2 0 Bagari 3 0 to 5 0 Beds 7 0 to 20 0 Doorways 35 0 Carts 40 0 Wagons 55 0 to 90 0 Telar 70 0 Plain-door frames 2 8 to 4 0 Doors 4 0 to 6 0 Baskets 6 ps. to 4 an
	Architectural ...	223	171 Sikh 20	32	...	0 10	...	...	...	
	Carriage-building. English	157	157	...	...		...	...	...	
	Carriage-building. Native	6	Raths Capitalists.				...	...	...	
	Furniture ... English	153	13	140	...		...	...	...	
	Furniture ... Native	...	...	...	...		...	...	...	
	Turnery and Kamángiri	Kahárs 8	...	8	...	Rs. 7½ to Rs. 20 per mensem.	...	...	...	
	Boat-building ...	...	...	...	...		...	...	...	
	Basket-making ...	290	250	40	...		...	...	...	
	Miscellaneous, sticks and toys.	...	...	...	...		...	...	...	
	Shoe lasts ...	...	...	...	...		...	...	...	
	Boxes, bed-legs ...	27	27	...	...		...	...	...	
	Hooka stems, &c. ...	...	...	...	...		...	...	...	
	Musical Instruments ...	...	...	...	...		...	...	...	
	Shuttles ...	...	...	...	...		...	...	...	
	Combs ...	...	...	...	...		...	...	...	

Raw material 15,000 imported.

Castes—Sheikhs. Khati.

Dealers in wood 9.

H. Khati 1,695
M. Khati 373
Sheikh 143
Pathán 2

Sikh Khati 12
H. Jhinwar, Chura and Herí 25
M. Jhinwar and Múchi 4
2,6

DELHI DIVISION—*continued.*

District.	Description.	Number.	Hindu.	Muhammadan.	Factories.	Wages.	Outturn	Exports.	Imports.	Remarks.
ROHTAK.	Agricultural Implements	...	...	...	...	Wages 4 annas to 1 rupee. Outturn Rs. 198 per head per annum.	...	...	...	
	Architectural ...	...	...	...	...		...	..	...	Doors Rs. 40 to 50.
	Carriage-building. English ...	...	...	...	...		...	...	...	
	Carriage-building. Native ...	...	...	...	...		...	...	...	
	Furniture English ...	...	...	...	...		...	...	...	
	Furniture Native ...	...	...	...	...		...	...	...	
	Turnery and Kamángiri	2,475	...	...	...		4,90,528	...	...	
	Boat-building ...	...	...	...	...		...	...	...	
	Basket-making ...	...	...	...	..		...	...	...	
	Miscellaneous, sticks and toys.	...	...	...	...		...	...	...	
	Shoe lasts ...	...	...	...	...		...	...	...	
	Boxes, bed-legs ...	...	...	...	...		...	...	...	
	Hooka stems, &c. ...	...	...	...	...		...	240	...	From beri and sandal-wood.
	Musical Instruments ...	...	...	...	...		...	...	...	*Caste*—Khatis, 2,897.
	Shuttles ...	...	...	...	...		...	...	...	
	Combs ...	...	...	...	...		...	...	...	
UMBALLA.	Agricultural Implements	...	...	...	...	5 annas to 8 annas per diem.	...	...	...	
	Architectural carving...	...	...	...	...		...	...	...	
	Carriage-building. English ...	...	..	...	...		...	...	...	
	Carriage-building. Native ...	...	...	...	...		...	...	...	
	Furniture English ...	...	...	...	...		...	...	...	
	Furniture Native ...	...	...	...	...		...	...	...	
	Turnery and Kamángiri	...	...	...	...		...	...	...	
	Boat-building ...	+400	Barhi	...	...		...	...	...	
	Basket-making ...	50	Kahars	...	...		...	...	...	
	Miscellaneous, sticks and toys.	...	...	...	...		...	...	...	
	Shoe lasts ...	...	...	...	...		...	...	...	
	Boxes, bed-legs ...	...	...	...	...		...	.	...	
	Hooka stems, &c. ...	...	...	...	...		...	...	...	
	Musical Instruments ...	...	...	...	...		...	...	...	
	Shuttles ...	...	...	...	...		...	...	...	
	Combs and spoons ...	30	Sheikhs	...	9		...	...	...	

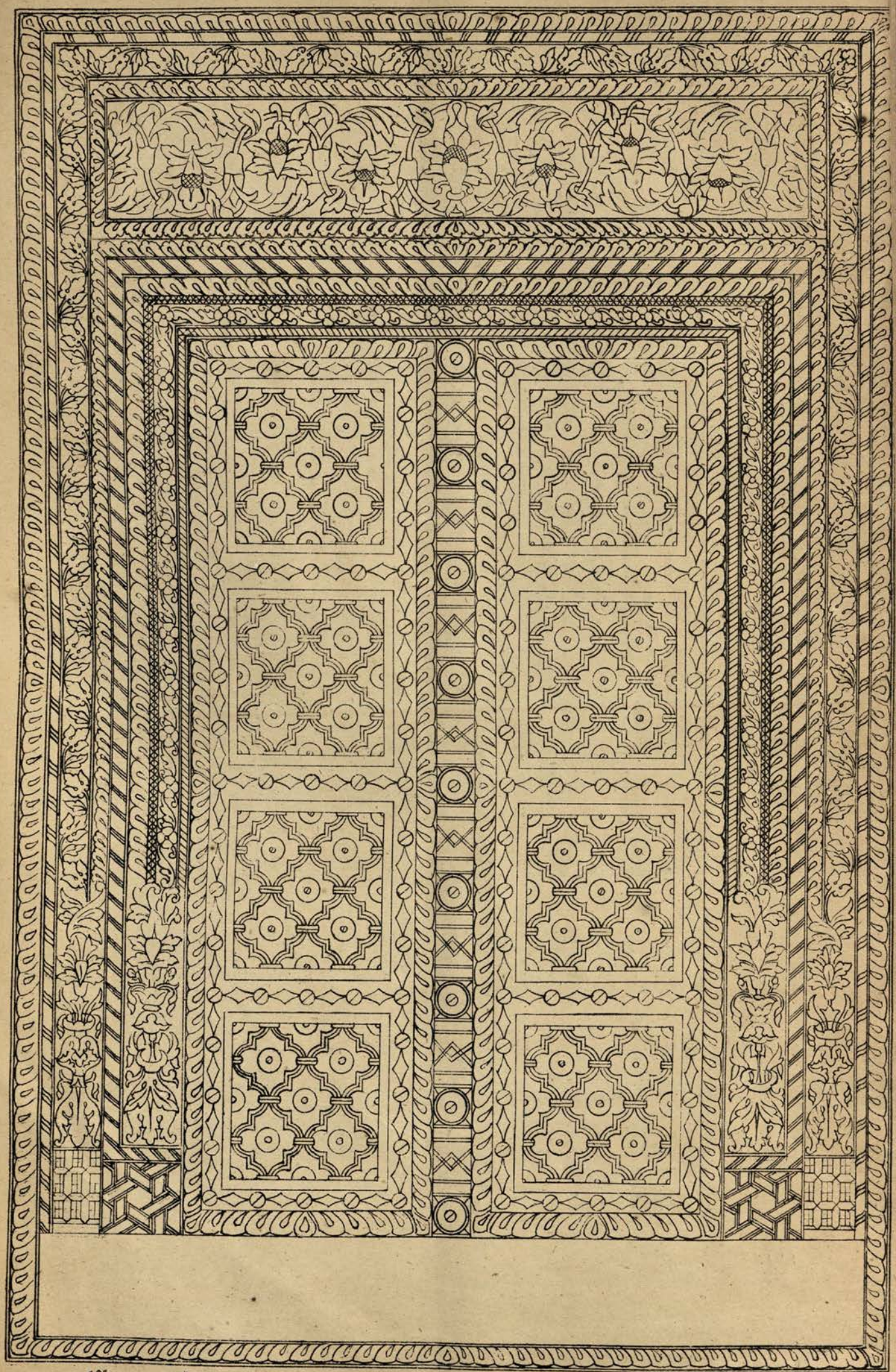
Raw material ... Total Rs. 20,000. Wood imported ... Rs. 18,549.

DELHI DIVISION—*concluded.*

District.	Description.	Number.	Hindu.	Muhammadan.	Factories.	Wages.	Outturn.	Exports.	Imports.	Remarks.
SIMLA.	Agricultural Implements	...	...	...	...	Earnings from Rs. 12 to Rs. 18 per mensem.	...	...	...	
	Architectural carving...	32	16	16	11		...	...	...	
	Carriage-building. English	...	...	...	...		...	...	...	
	Carriage-building. Native...	...	...	...	...		...	...	...	
	Furniture. English	58	51	7	14		...	...	...	
	Furniture. Native...	...	...	...	...		...	...	...	
	Turnery and Kamángiri	...	...	...	...		...	...	...	
	Boat-building ...	...	...	...	...		...	...	...	
	Basket-making ...	32	27	5	12		...	...	...	
	Miscellaneous, sticks and toys.	...	...	...	...		...	...	...	
	Shoe lasts ...	...	...	...	...		...	...	...	
	Boxes, bed-legs ...	...	...	...	...		...	...	...	
	Hooka stems, &c. ...	...	...	...	...		...	...	...	
	Musical Instruments ...	...	...	...	...		...	...	...	
	Shuttles ...	...	...	...	...		...	...	...	
	Combs ...	...	...	...	...		...	...	...	

FIG. I

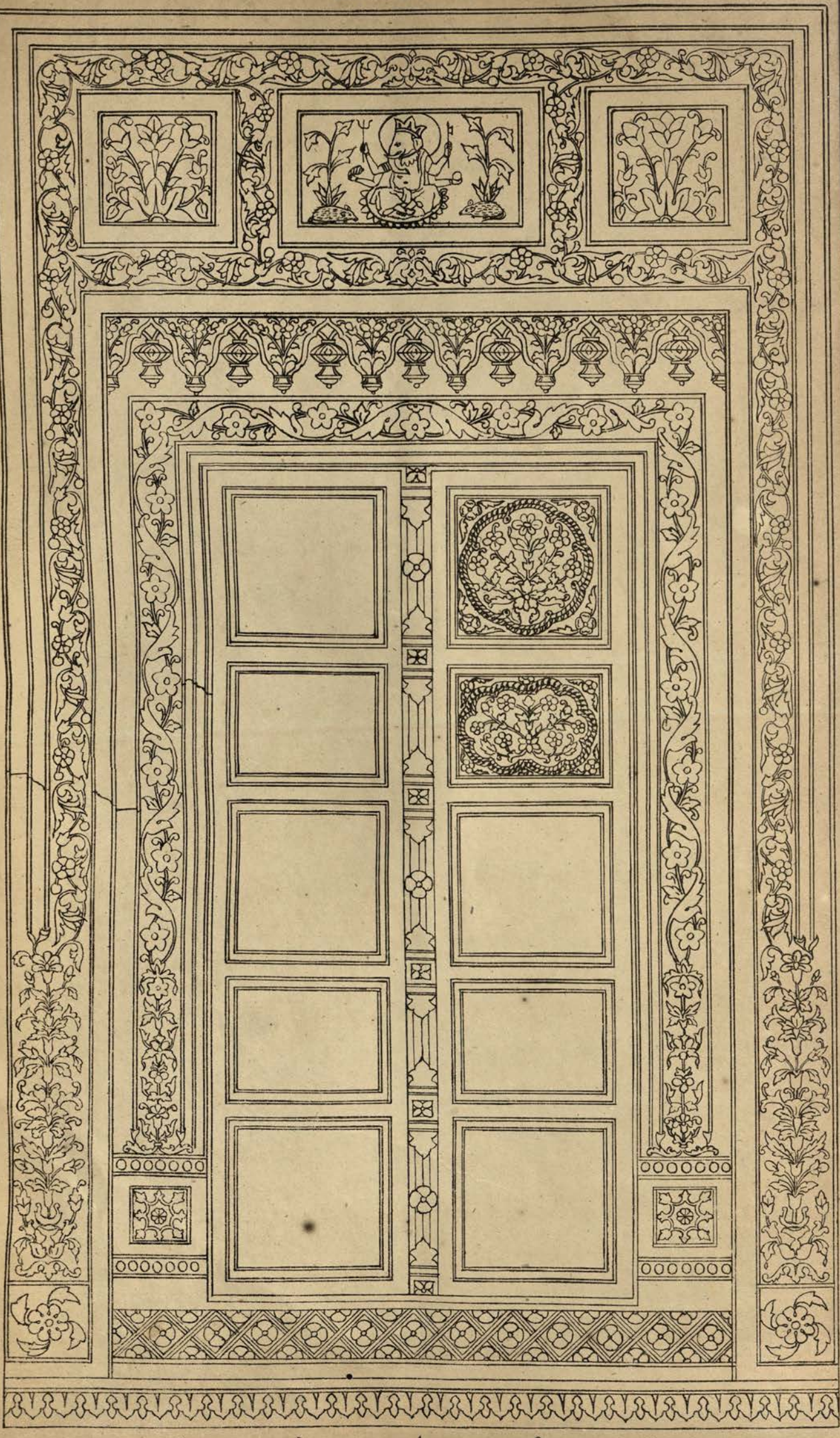
Chaukát and Door, showing Brass panelling.



Scale—1½ inch=1 foot.

FIG. II.

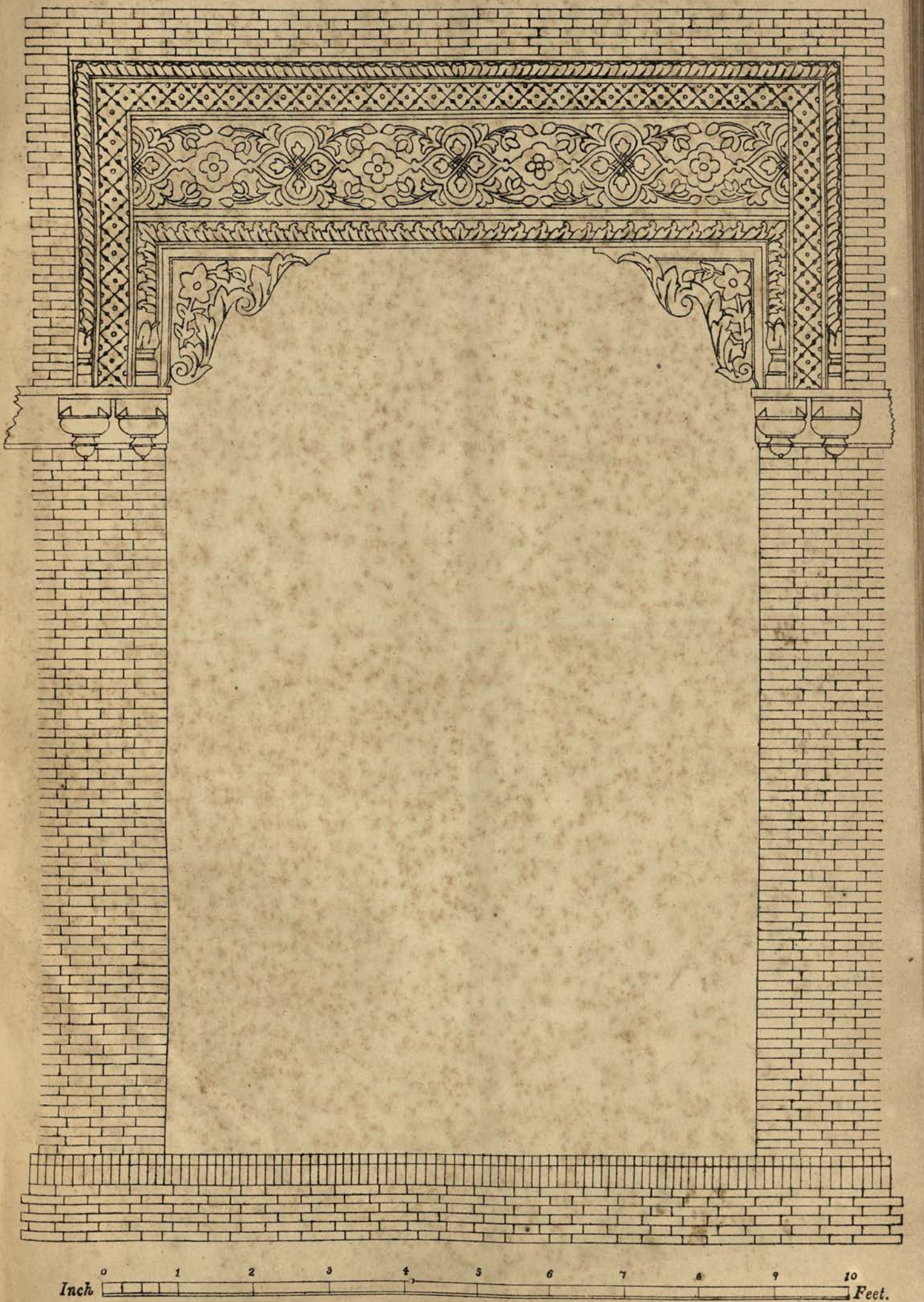
Chaukát and Door.



Inch 2 0 1 2 3

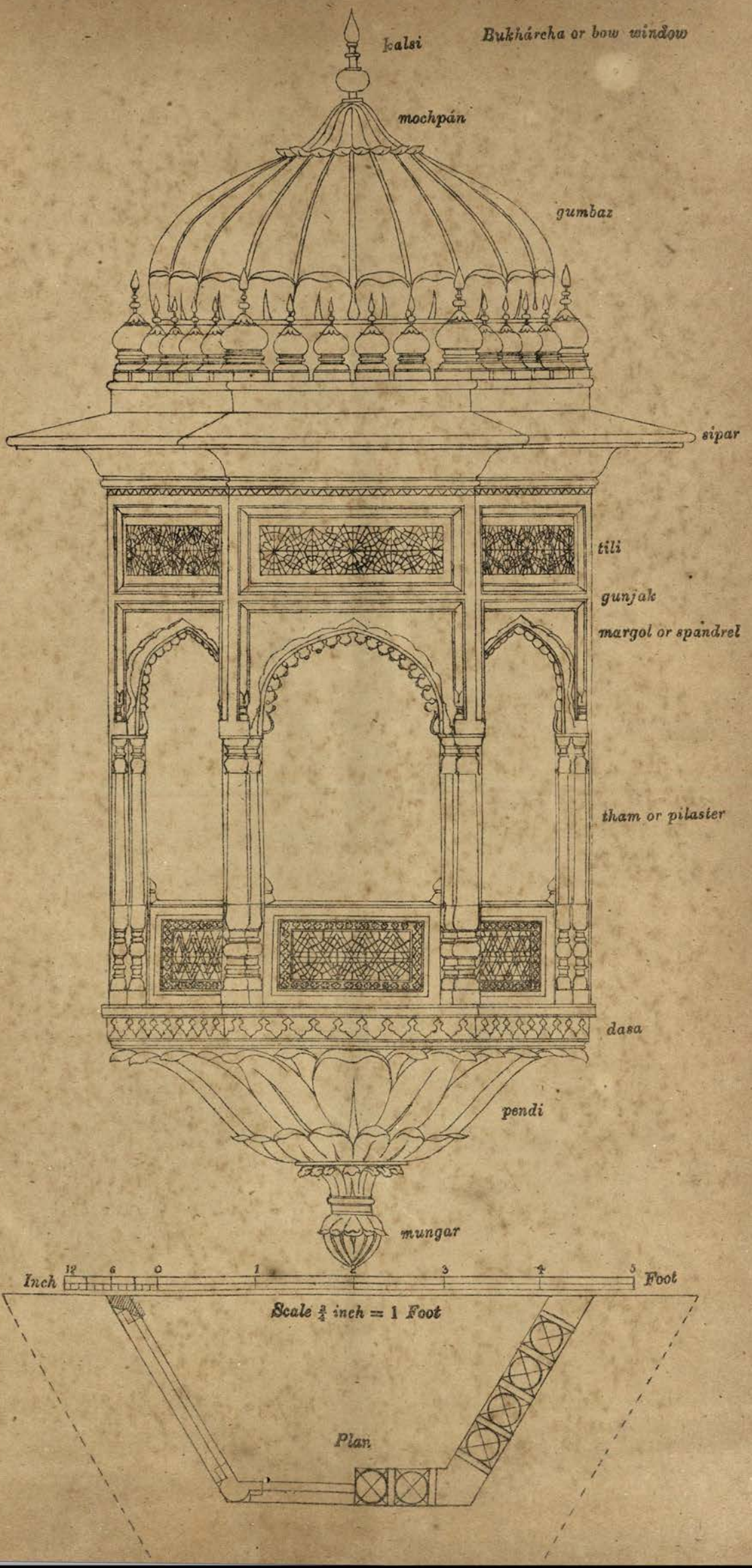
FIG. III.

Toda or Lintel.



Scale—¾ inch=1 foot.

FIG. IV.


kalsi
Bukhárcha or bow window
mochpán
gumbaz
sipar
tili
gunjak
margol or spandrel
tham or pilaster
dasa
pendi
mungar
Inch
12
6
0
1
2
3
4
5
Foot
Scale ¾ inch = 1 Foot
Plan

MONOGRAPH

ON THE

GOLD AND SILVER WORKS

OF THE

PUNJAB.

1888-89.

Published by Authority.

Price, Re. 0-8-0.

IX
45

Lahore:
THE "CIVIL AND MILITARY GAZETTE" PRESS,
Contractors to the Punjab Government.

1890.

Monographs on Punjab industries

BOMBAY BRANCH
OF THE
Royal Asiatic Society.
CLASS

MONOGRAPH

ON THE

GOLD AND SILVER WORKS

OF THE

PUNJAB.

1888-89.

Published by Authority.

HH-1-2a

Lahore:
THE "CIVIL AND MILITARY GAZETTE" PRESS,
Contractors to the Punjab Government.

1890.

No. 787.

FROM

R. G. THOMSON, ESQUIRE,

Offg. Revenue Secretary to Government,

Punjab and its Dependencies,

To

THE SENIOR SECRETARY TO FINANCIAL COMMISSIONER, PUNJAB.

Dated 18th December 1890.

Revenue and Agriculture.

General.

SIR,

I AM directed to acknowledge the receipt of your letter No. 762, dated 13th November 1890, submitting a monograph on the gold and silver works of the Punjab compiled by Mr. E. D. Maclagan, C.S., together with the Financial Commissioner's review of the same.

2. In reply, I am to say that the Lieutenant-Governor agrees with Mr. Elsmie that Mr. Maclagan has carried out the task entrusted to him with much success, and that he has merited the acknowledgments of Government.

I have, &c.,

R. G. THOMSON,

Offg. Revenue Secretary to Government, Punjab.

Punjab Government Press, Lahore—20-12 90—.560

No. 762—7230.

FINANCIAL COMMISSIONER'S OFFICE, PUNJAB.

LAHORE, *dated* 13*th November* 1890.

FROM

D. C. JOHNSTONE, ESQUIRE,

Offg. Junior Secretary to Financial Commissioner, Punjab.

TO

R. G. THOMSON, ESQUIRE, C.S.

Offg. Revenue Secretary to Government, Punjab.

SIR,

I am directed to forward five copies of a Monograph on Gold and Silver Work in the Punjab, compiled by Mr. E. D. Maclagan, C.S., from district reports, corrected and amplified by personal investigation. The Monograph is, in Mr. Elsmie's opinion, very interesting, and contains much useful information. The illustrations appended to it have been prepared under the supervision of the Principal, Mayo School of Art, Lahore, and they add, in the Financial Commissioner's opinion, to the interest and value of the publication.

2. Mr. Elsmie, I am to say, trusts that His Honor the Lieutenant-Governor will agree with him in thinking that Mr. Maclagan has carried out the task entrusted to him with much success, and has fully merited the thanks of Government. The instructions issued by this office will be found in Financial Commissioner's Circulars Nos. 20 and 51 of 1889. For reasons to be explained later there are difficulties in the way of making such monographs really full and exhaustive; but Mr. Maclagan has, in Mr. Elsmie's opinion, made excellent use of the materials at his disposal.

Silver supply.

3. He first states the sources of supply of the precious metals. None of the silver used is, it would appear, found in the Province. The supply is made up of (*a*) Chinese silver imported *viâ* Bombay in slabs of considerable size; (*b*) bar-silver, known as *kurs*, or bread-loaf silver, imported from Europe; (*c*) Yárkandi and Bokháran *kurs;* (*d*) silver imported from Bombay and known as *háthipaur* silver; (*e*) melted coins, the best being (in order) the *Nánakshái* rupees, the *Nandrámi* rupees, and the British rupees; (*f*) silver from melted ornaments.

Gold supply.

4. In para. 2 Mr. Maclagan states the names of the places in the Punjab where gold is found, and describes the manner in which gold is obtained. This source of supply is unimportant. Gold also comes from Europe and Australia in ingots, and in leaves (*panna, patra*) from China. Gold leaves are also made from old coins, of which a great quantity appears to be utilized for jewellery; Russian gold in the shape of five-rouble pieces is largely imported; and Yárkandi and Bokháran gold dust also finds a market in the Punjab.

Imports of gold and silver.

5. The annual imports of gold and silver into the Province generally must be very large, but no attempt is made to estimate them. Delhi alone is said to import a crore of rupees of the two metals annually. It is said also that the bulk of the imports pass through Delhi, Amritsar, Lahore and Pesháwar.

The *sráf* and the *sunár.*

6. The *sráf* is in the Punjab the capitalist holder of gold and silver, and the *sunár* (or artizan goldsmith) is ordinarily merely a workman who is supplied either by a *sráf* or by his customers with the metal to be worked up. The observations in paragraphs 10 and 11 regarding the *sunárs* as a caste and their character are, the Financial Commissioner thinks, interesting. The *sunár*, Mr. Maclagan says, is not appreciated by his customers: he is inhospitable, has no sympathies, and is nobody's

friend. He is generally "known to the police," and he has a reputation for inveterate dishonesty. His business is by no means a paying one; and the general effect upon it of the 40 years of British rule is thus described by Mr. Maclagan:—

"We have therefore a decrease in the merely ostentations class of works: "an increase but a concentration of the better forms of ornament industry, and "a large development of the simplest and coarsest kinds. As regards the "*sunárs* as a class the effect has been generally beneficial."

Goldsmiths' weights, &c., and assaying and purification of gold and silver.

7. The goldsmiths' weights and instruments are carefully described in paras. 14 and 15, and in para. 16 the modes of testing the precious metals are explained. The various ways in which gold and silver are commonly purified are set forth in para. 16.

Ornament making, &c.

8. Metal of the required purity having been obtained the *sunár* proceeds to make the ornament. In villages the ordinary *sunár* will do the chasing and embossing and setting of stones himself; but in towns there are separate classes of workmen for these different processes. In para. 19 Mr. Maclagan describes in considerable detail the manufacture of each of the most common ornaments; and then proceeds to the subject of the making of gold and silver wire, lace, thread, ribbon and so forth. Gold inlaying has ceased at Mooltan, and is declining elsewhere, except, it is said, in Gujrat city. The electro-plating industry seems not very important at present, though a hand-book describing the processes was lately published at Delhi.

Enumeration of Punjab ornaments, &c.

9. Mr. Maclagan's description of the various ornaments contains much useful detail. The Financial Commissioner has read with interest the observations regarding the religious scruples of the people as to wearing or not wearing ornaments. The social aspect of the matter of ornament-wearing is discussed in the closing para. of the Monograph. The wealth of the Province in jewellery must be very considerable indeed, and there is every reason to believe that it is increasing steadily at present; though it is possible, as Mr. Maclagan remarks, that the spread of English education, and anything that may in the future give a very decided impetus to commercial enterprize, will effect a change of habits.

District Reports.

10. As usual the treatment of the subject by the officers who have written the District Reports has been very unequal. In Mr. Maclagan's opinion the best reports are by—

Lála Múlráj, Extra Assistant Commissioner, Lahore;

Lála Jowála Pershád, Officiating Extra Assistant Commissioner, Dera Ismail Khan;

Mr. R. P. Warburton, Officiating Extra Assistant Commissioner, Hissár;

Lála Chuni Lál, Extra Assistant Commissioner, Kángra;

Mr. A. H. Diack, C.S., Kulu;

Maulavi Zia-ud-dín, Extra Assistant Commissioner, Delhi, has prepared a very full report; and that prepared in the Jhang District Office shows care and industry.

As an instance of the inequality of treatment alluded to above, I am to remark that the Dera Ismail Khan Report covers 168 pages of foolscap, while that from Dera Gházi Khan is contained on one side of a sheet of paper. It is partly owing to this cause, and partly owing to the non-receipt—up to five months after due date—of the Karnál Report, that Mr. Maclagan has found difficulty in giving statistical figures such as those embodied in the monographs of the last two years.

I have, &c.,

D. C. JOHNSTONE,

Offg. Jenior Secretary to Finl. Commr., Punjab.

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MONOGRAPH

ON THE

GOLD AND SILVER WORK

OF THE

PUNJAB.

---

1. Scope of the following sketch.—The following account of the Gold and Silver Work of the Punjab is compiled from District Reports submitted to the Financial Commissioner in reply to a call for information. The main defects under which it labours are a want of comprehensiveness of treatment and an absence of personal information on the part of the Compiler. Meantime I would premise that where certain facts are stated in the following pages as true for certain districts, this does not necessarily imply that they are not true for other districts also, but merely that information is forthcoming regarding certain districts only. Further, I have avoided as far as possible the repetition of information already accessible in Mr. Baden-Powell's "*Punjab Products*" and "*Punjab Manufactures*," and Mr. Kipling's notes in the *District Gazetteers*. I would also premise that the word "Goldsmith" in the following pages stands generally for a Silversmith as well. Further, that the monograph does not deal with the craft as practised in Native States, nor does it treat, except incidentally, of work in precious stones. And lastly, that it does not deal with jewellery as made for European customers. A few plates have been attached to the monograph, but further illustrations will be found in Mr. Baden-Powell's "*Punjab Manufactures*" and in the Appendix to Captain Davies's Shahpur Settlement Report.

2. Gold and Silver found in the Province.*—The only native silver traced in the Province is that of the Wazíri Rupi Mines in Kulu, which have not now been worked for many years.

Gold is found in small quantities in the sand of the Seeswán, Manimájra, Ghaggar and Kosulla Nadís in the Umballa District; of the Sutlej in Simla; of the Mangarwál, Dhobah, Chohal and Dadar Khads of Hoshiárpur; of the Biás in the Dera and Hamirpur Tahsíls of the Kángra District; of the Jhelum above the Gatalián ferry; of the Kahan, Kási and Bunhá "kas"-es of the Jhelum Tahsíl, the Sanj, Nalla Bunha and Kahán "kas"-es of the Chakwál Tahsíl, and of the Gabhir, Sawan and Aukar "kas"-es of the Talagang Tahsíl of the Jhelum District. Also in the sand of the Sohán, Seel and Indus Rivers of the Pindigheb and Attock Tahsíls of Ráwalpindi; in the Indus and Kábul Rivers and their tributaries in Pesháwar; and in the Indus in Hazára, Kohát and the Miánwáli Tahsíl of Bannu. In Pesháwar the extraction of gold is confined apparently to ten villages; in Kohát to the four tappás of Jabbi, Mandari, Niláb and Shakardara; and in Ráwalpindi to the sixteen villages of Attock, Kharakhel, Durmali, Mulak, Jullaba, Pindigheb, Iklas, Kambal, Kot Malior, Mari, Balah, Chapri, Oojri, Nara, Makhad and Khani.

---

* Some facts given in the official correspondence on the subject are incorporated in the following account. There is further information to be got in the Settlement Reports [Delhi paras. 26 and 204; Hoshiárpur, para. 11; Jhelum, paras. 35 and 121; Pindi (Cracroft), para. 644; Hazára, para. 20; Pesháwar, para. 12, Kohát, para. 359 and in Ball's *Economic Geology of India*]. Gopal Dás, *Tawárikh-i-Peshávar* gives an excellent account of the whole subject for that District.

The season for working in Umballa is the three months of the rains; in Kohát, August and December to March; in Pesháwar, in early winter and in summer when the rivers are low. As to Pesháwar, however, Captain Hastings reported some years ago that the gold was washed in September and October, and again in March and April. In Jhelum the yield is said to be proportionate to the abundance of the rains.

The washing is done in Umballa by "Kahárs" called "Doolas," who work in gangs of eight and ten men, sharing the profits and independent of a capitalist. No Pesháwaris wash for gold, but all the work in Pesháwar is done by Cis-Indus Káhirs and Nyárias in parties of ten or more. In 1875 the average size of a party in Pesháwar was reported to be seven; in Kohát the average is ten to a tray.

The processes employed in the Salt Range are detailed at pages 12 and 13 of Mr. Baden-Powell's "*Punjab Products*," to which the reader is referred. In Pesháwar the sand is collected by damping the palm and applying it gently to the ground, instead of by scraping the sand out with a wooden shovel. The form of *drún* or cradle varies. In Umballa it is a large open round trough with a tube in one side; in Pindigheb it is a rectangular wooden box open at the top, with an aperture at the bottom of one of the sides; in Pesháwar (where it is called a *hawa*) it is a circular tray about six inches deep and three feet in diameter. All these are different from the Jhelum type described by Mr. Baden-Powell. In Kohát the cradle is ten feet long by two feet broad, and is said to cost Rs. 10. In Ráwalpindi the water for washing the sand is applied with a ladle called *kaswa*. The reed-sieve does not seem to be used in Pesháwar, Kohát and Umballa; nor does the *karí* or wooden platter (called "*phulli*" in Ráwalpindi) come into play for the purposes of a second washing in those districts. In Ráwalpindi the sand is transferred to the *phulli* when about a sér has been left, and mercury is applied after this has been reduced to half a sér. In Umballa mercury is applied when the mud has been reduced to a twentieth of its original weight. The amount of mercury used in Ráwalpindi is supposed to equal half the estimated weight of the gold. In Ráwalpindi too water is used to help the process of rubbing away the mud from the mercury and gold. In Pesháwar the mercury is squeezed out through the cloth without being heated; the gold being heated afterwards to strengthen it. In Ráwalpindi and Umballa the use of the cloth at all is not noticed.

The total amount of gold found in the Province is, it is hardly necessary to say, quite insignificant. The gold resulting from one washing in Pesháwar is stated to be between one and two *máshás;* and in Kángra four to five annas worth of gold dust is all that can be extracted in a day. The return for the season in Pesháwar and Kohát is said to average ten *talás* a day. The profit to be made from the industry is equally insignificant. In Umballa eight annas is the most a man can make in a day even when he is successful in finding his gold. In Pesháwar the goldwashers make from three annas to one rupee, or on an average about six annas a day, per man; but in 1875 the average was reported to be from two to four annas a day, and two annas a day is really as much as the washer expects. The river gold of Umballa is held to be first class, but that of the Indus is inferior and sells in the Pesháwar and Kohát markets for only Rs. 14 to 16 a *tolá*.

The owner of a tray on the Indus, when he is separate from the workmen, may in Pesháwar take the gold from the workmen at Rs. 2 below the Pesháwar price; in Kohát he gets Rs. 4 for each *tolá* extracted. The farmer's gross annual profits are in Kohát estimated at Rs. 40 a tray, and his net profits, after deducting advances, price of gold, etc., at Rs. 29 a tray. The proprietors of the soil too in some places in Pesháwar get Re. 1 a tray; in Zarobi they get Rs. 2, and in other villages at various rates. At Hund the Khán takes one *rati* per diem per tray. In Bannu the gold is delivered at a fixed price to a farmer, while the proprietors get a fixed proportion of the proceeds.

The Government does not tax the washings in Kángra, Hoshiárpur, Hazára, Bannu or Pesháwar. In Umballa the monopoly for the Seeswán and Manimájra is sold annually; the average return for the last three years has been Rs. 14 on the former, and Rs. 103 on the latter nadi. In the Jhelum

Tahsíl cradles are assessed at Rs. 2-8-0 each; in Chakwál at Rs. 5; and in Talagang at Rs. 2-4-0 to Rs. 3. The number of cradles last year in the above three Jhelum Tahsíls was, respectively, 83, 24 and 33. In Ráwalpindi the ordinary system is for licenses to be given to the workers, the rate at Makhad being Rs. 5 a license, and in the other villages Rs. 2. The average results for the three years ending 1888 was Rs. 206. In 1889-90 the goldwashing of the Attock and Sohán was leased for Rs. 916. In Kohát Government takes Rs. 6 a tray, of which, in jágír villages, three quarters go to the jágírdár. The average yield for the last five years in Bannu is Rs. 139.

The figure reached by the Ráwalpindi licenses in 1889 is the outcome of an attempt made by European enterprize to work the goldwashings on a large scale. I understand that the works were destroyed by a flood, but the history of this attempt is entirely ignored in the report submitted from the Ráwalpindi District, and further information regarding it is wanting.

3. Different kinds of Gold.—The bulk of imported gold is *passá*, a term applied to English and also to Australian gold and to European gold generally. A "*pásá*" or "*passá*" is a lump or ingot; and the word is used because English gold is always sold in block. The ingot is sometimes stamped with a B., sometimes with the words "National Bank" or "Khális Bank 100"; and sometimes with a figure showing the percentage of fineness. In Hissár we find the *passá* in small hexagons of 24 *tolás* and 4½ *máshás* each, said to be imported from Sharp and Wilkins; but most commonly it seems to be in bars. In Amritsar the piece is of 26 *tolás* less 2½ *máshás*; in Gujránwála 26 *tolás*; and in Dera Ismail Khan 25 *tolás*. Another account weighs it at 24 *tolás* 8 *máshás* and 6 *ratís*. The stick or bar form imported to Amritsar weighs 30 *tolás* 4 *máshás*. The import into Dera Ismail Khan is said to be made through the Bombay Bank, and sometimes by the Lahore Branch of the Bank of Bengal. One account says that *passá* gold is passed through the furnace 24 times with a loss of 4 *ratís* per *tolá* of alloy; and that there are two kinds of *passá*, the *asli* and the *nakli*, of which the latter has no mark, does not adhere to the size of ingot and is inferior in quality, selling at about 8 annas less per *tolá* than the *asli*. Some Banks sell *passá* purer than others, and (in Amritsar at least) there will generally be Re. 1 to 1-8-0 of silver in a *tolá* of *passá*. The prices of European gold, of course, fluctuate; but the figures quoted last autumn in Hissár are Rs. 23, Rs. 23-8-0 and Rs. 24 per *tolá*, according to quality; in Rohtak Rs. 24; in Gurgáon Rs. 23, or Rs. 23-12-0; and in Siálkot Rs. 23. In Mooltan bars marked "100" obtained Rs. 23-4-0 per *tolá*, and for each unit below 100 the price is decreased by 3 annas 9 pies per *tolá*. In Lahore the price given was Rs. 24-13-0 and in Kohát Rs. 25. The usual price, it will be seen, was from Rs. 23 to 24 a *tolá*: the high figure for Lahore is unexplained. The cost of carriage raises the price in Kángra to 4 annas a *tolá* above the Amritsar price for the corresponding quality, and the sea-imported gold of Pesháwar is quoted at 4 annas a *tolá* above the corresponding Bombay rate.

Panna or *patra* gold is gold in the form of leaves. It is in this shape that the gold known as Chinese is sold; it fetches Rs. 22-14-0, Rs. 23-6-0 or Rs. 24 at Hissár; and will be found in the market as far as Pesháwar. Gold in leaves a few inches square is sold in Simla: the best kind of this form of gold has the figure 100 stamped on it.

When *old ornaments* are melted down and sold in lumps they appear in various sizes and shapes with various rates, and are known as "*desia pássá*." In Siálkot we find the gold of solid ornaments, such as *haslís* and bangles, selling for as much as Rs. 22 the *tolá*, while the more delicate articles when melted down, give a gold valued at Rs. 16 to Rs. 20 a *tolá*. When old ornaments are (as seems to be more generally the case) sold by the leaf they are known as "*desia panna*," or more commonly merely as "*panna*," "*patra*," "*patar*," "*rainí*," etc., which will sell according to purity at all prices from Rs. 16 to Rs. 24 per *tolá*. The same terms apply to plates made out of impure gold, gold lace, gold wire, etc., which have been purified. Such plates sell in Lahore at Rs. 24-8-0 a *tolá*.

Gold "*patrás*" may also be made from old *coins*. You hammer your coin out flat, dip it in salt water, rub it with *Bhathor* from the *chúlhá*, and heat it

till the alloy disappears or nearly so. The "*patra*" that results is of course less in weight than the original coin; for instance, the Russian *mohar* or five-rouble piece used at Dera Ismail Khan for this purpose weighs 7½ *máshás* (*másha* of 7 *ratís*) and contains about 5 *ratís* of copper; and the resulting *patra* weighs 6¼ *máshás* (*másha* of 8 *ratís*). The size of *patra* is given at 4 inches square. A very valued coin for this purpose is the Jaipur *mohar*, the gold of which sells at Siálkot for Rs. 24 a *tolá*: in the Deraját it is apparently no longer found though its name is still known. Similarly "*pthmáshás*" and "*chemáshás*" are no longer employed in Gujránwála, though in Gurdáspur and Umballa the *athmásha* at least is occasionally used: it contains ¾ *másha* of copper alloy. The Bokháran "*tillá*" is commonly used; for example, in Pesháwar, Hazára, Shahpur, Ráwalpindi, Mooltán and Siálkot: at Siálkot it fetches Rs. 22 a *tolá*, at Mooltan Rs. 23 and in Hazára Rs. 24; while in Ráwalpindi a *tillá* sells for Rs. 9. With Bokháran *tillás* will sometimes be found coins of Khokand. The gold obtained from *tillás* is generally considered slightly inferior to *passá*. The Dutch *ducats* known as *butkís* or *budkís* are also extensively used. In Siálkot (where they are also said to be called *putlís*) their gold sells at Rs. 24 per *tolá*: at Mooltan at Rs. 23, and in Hazára at Rs. 25. In Ráwalpindi a *butki* is said to fetch Rs. 7-8-0. *Mohars* of Aurangzeb sell at Ráwalpindi for Rs. 26-10-0 a piece, and Muhammad Shah's at Rs. 22. Old *mohars* of Murshedábad and Farrukhábad will be found in the Dera Ismail Khan District, but they are kept now merely as *nazars* or to be strung on a necklace (*henkal* or *hamail*). In Siálkot a Farrukhábadi or *Kaldári* (*i e.*, an E. I. C. Murshedábadi) *mohar* commands a price of Rs. 25 per piece or Rs. 24-8-0 per *tolá*. In Simla the coins most in request used to be those of Akbar's coinage, which fetched, they say, Rs. 25 to Rs. 28 each: now the favorite coin is the old Jaipuri *ashrafi*; the gold of the new Jaipuri *mohars* is not so good. And in Mozaffargarh will occasionally be found *mohars* imported from Baháwalpur.

Russian gold is also imported largely in the shape of five-rouble pieces, known as *bittís*. It is said that 150 of these enter Amritsar every day: and the *bitti* as there known is 6½ *máshás* in weight and is valued at Rs. 12-4-0. They are found in Jhang, Ráwalpindi and doubtless in other districts also. In Shahpur the term *bitti* is apparently applied to English sovereigns and half sovereigns.

Gold dust is generally known as *gori*, and will be found in the Jhelum and Ráwalpindi markets, in the latter of which it is also known as "*drúnwála*," from the *drún* or cradle used by goldwashers. Yárkandi dust is sold in Kulu, and in Lahore it fetches the low price of Rs. 12 to Rs. 20 a *tolá*. Bokháran dust, however, is quoted at the same figure in Lahore, and in Mooltan it fetches Rs. 20 or Rs. 21. Pesháwar gold dust is worth Rs. 22 a *tolá*, but before reaching the goldsmiths it is further purified, losing 4 *ratís* in the *tolá*, and it is sold in Pesháwar for Rs. 23-2-0 a *tolá*. The gold dust is, in Pesháwar at least, generally melted and made into sticks before being sold in the market. A gold known as "*Jútá Bokhára*" will be found in Gurdáspur, where it is said to be obtainable only from certain old Sikh families.

The purest gold of all is known as "*kundan*." It costs about Rs. 25 a *tolá*, and is used for beating out gold leaves. It is also very generally used in setting stones, whence the setter of stones or *murassakár* is often known as the "*kundansáz*." In Hoshiárpur pure gold is known as "*kora*." For alloys various names are found, as, for instance, *lagda* (an alloy with copper and silver) in Gujrát; and in Muzaffargarh gold containing $\frac{1}{12}$ alloy is called *babriwanak*. In Siálkot any gold which has in it an alloy of anything between 2 *ratís* and one *másha* to the *tolá* of gold is called *chaṇdna*: an alloy of silver with gold in Jhelum is called *obri*, in Dera Ismail Khan *pithi*, in Umballa *rúpcha*. A similar alloy of copper is called *sobi* in Siálkot, Jhelum and Dera Ismail Khan; or *subhanga*, as in Siálkot and Umballa: while an alloyed gold containing one *máhsa* of silver and one of copper to the *tolá* of gold is known as *dokara* or *dorassa*; the former word being affected in Jhelum, the latter in Dera Ismail, and both indifferently in Siálkot. In Hoshiárpur any gold alloyed with silver is called *pitak*, and gold alloyed with copper *long*.

In Jhang we meet with a kind of gold called *sil* gold, which perhaps corresponds with the *silli* silver noted below.

4. Different kinds of Silver.—A very large amount, as much, it is said, as Rs. 8,000 worth per diem, of *Chinese* silver is imported into Amritsar *viâ* Bombay: this generally appears in the form of slabs valued at Rs. 3,000 a piece. Similar slabs can be seen in Bhiwáni and doubtless elsewhere. The Chinese silver at Amritsar contains a copper alloy of about Re. 1-8-0 per cent. In Rohtak Chinese silver sells at 11 *máshás* to the rupee; in Hissár at Rs. 107, Rs. 107-8-0 or Rs. 108 per hundred *tolás*, according as it is 16 *pan*, 16½ *pan* or 17 *pan*. (The odd rupees over 100 in this form of calculation are known as *badha* in Hissár, and as *badlaur* in Kohát). In Hissár the Chinese silver is known as *silli*, from the *sils* or slabs in which it is sold.

Another kind of silver, that known as the *kurs* or breadloaf silver, is the bar silver imported from Europe; it is especially pure, and sells at Siálkot for Re. 1-1-3 a *tolá* and in Hazára for 10½ *máshás* to the rupee. Yárkandi and Bokháran *kurs* is imported into Lahore, where it sells at 11 *máshás* to the rupee. Yárkandi *kurs* has about Rs. 100 in an ingot, and is found also in Kulu: it sells in Montgomery at 10¾ *máshás* the rupee. In Gujránwála the use of Yárkandi *kurs* has apparently died out.

A very much esteemed silver is the *háthípaur*, or elephant's foot silver, so-called from the shape. It is a soft silver, and used for its softness in wire-drawing: an ingot from which silver wire is to be drawn will consist of three parts of copper to 64 of *háthípaur* silver. It is said generally to have a horse's hoof impressed on it, when sold in the market. It is imported from Bombay to Lahore, where it sells at 10 *máshás* 7 *ratís* to the rupee. In Dera Ismail Khan it sells at Re. 1-1-6 a *tolá*. This is probably the same as the *súmwáli* or hoof-marked silver which is used in brick in Gurdáspur; and perhaps the same as the *passá* or bar silver employed in Jullundur and Ludhiána.

The *coin* most commonly melted for silver is the *Nánakshái* or Sikh rupee, the silver of which is very ordinarily used for ornaments. In Gujránwála its use is said to have died out, but we still find it used in districts like Gurdáspur, Jhelum and Dera Ismail Khan. In the last named district the price is stated to be Re. 1-0-9 per *tolá*. This rupee is supposed to weigh 11½ *máshás*, and sells at Re. 0-15-9. More modern Sikh coins are known to the trade as *Rájsháhi*, and are used in Umballa and Kulu, where they appear to be mainly represented by recent Patiála coinage. The *Nandrámi* rupee from Kábul is used on the frontier, and is considered the next best silver after the *Nánakshái*. Shah Shuja's and Dost Muhammad's coins are held to be the best; those of the present Amír Abdurrahmán are alloyed with one *másha* of lead and copper to the *tolá*. The English rupee is looked on as containing ¾ *másha* of copper and lead; and is valued, roughly, at 1 anna less than the same weight of silver.

Silver also appears in the market in blocks or wedges, known as *thobís*, which will sometimes be deeply indented so as to divide off into even weights. The *thobi* is prepared from inferior silver by refining or purification. It sells for 11 *máshás* the rupee at Lahore, in Montgomery and in Hazára; at Re. 1-0-1 per *tolá* in Siálkot.

Silver prepared from *melted ornaments* is sold in Hissár in "*chaktís*" or small circular pieces of various sizes, generally about 40 *tolás* in weight. The quality is generally 17 *pan*, qualities below this being seldom found. This class of silver is known as "*ghát*" in Jhelum. It sells in Hazára at 12 to 14 *máshás* the rupee; in Dera Ismail Khan old unsoldered ornaments fetch Re. 1 a *tolá*, while the lighter soldered kinds fetch 15 annas a *tolá*; and similarly in Siálkot old *karás* and *haslís* fetch Re. 1 a *tolá*, while old jewellery containing alloy will fetch only 12 annas a *tolá*.

The general name for alloyed or inferior silver is *rúpa*: in Jullundur the general rate is 10 to 12 annas a *tolá*. In Umballa, Siálkot, Jhelum and Peshá-war an alloy with zinc or pewter is known as *jasti*; an alloy with copper is known in Siálkot, Pesháwar, Jhelum and Lahore as *sobi*, in Umballa as *subhang*; an alloy with lead is called in Umballa *kasis*; while an alloy with both zinc and copper is termed *dokari* or *dorassi* in Lahore and Siálkot, and as simple *rúpa* in Jhelum. *Tokai* or *toaki* in Jhelum is said to be a name for an alloyed silver; in Ráwalpindi it is applied to silver obtained from melting old ornaments. In,

Muzaffargarh the better kind of silver is known as *Suniwáli*, and an inferior kind as *Sodhiánwáli*, *Chakiwáli* or *Talwáli*. The common silver of Montgomery is known as *Rasmi chándi*, and sells at the low rate of 16 *máshás* to the rupee. In Pesháwar there is a kind of silver called *Yammu;* and in Shahpur the *Tikki* or silver procured by *Nyáryás* from the sweepings of goldsmiths' shops is a recognized species only inferior to *kurs*. *Dilidara*, *Chauki-Shah-jahán*, *Urai*, *Phitichúna*, *Muhim-sháhi*, *Ajota Gágarsháhi** and *Shuda-shuda chandi* are names given to various kinds of silver in Kulu, some of which are very possibly the same as some of those described above. It may be noted that the price of silver in Kángra is ordinarily ½ anna per *tolá* above that of the corresponding quality in Amritsar.

5. Export and Import of Bullion, &c.—The official foreign trade returns show the exports and imports of treasure (*i. e.*, specie and bullion, gold and silver) separately for transactions undertaken by the public and by Government. The outlying countries are classed in the four groups of Kashmír, Sewestán, Kábul and Ladákh. The export of treasure to any of these tracts is quite infinitesimal compared with the large imports received from them; and the export of bullion for the express purpose of employment on ornamental work is practically non-existent. A certain amount of the gold imported into Kulu from Hoshiárpur and Amritsar is said to find its way beyond British territory.

There are especially large imports of treasure from Kashmír, but very littler of this seems intended for employment in gold and silver work; and, similarly, the imports from Sewestán appear to have little to do with our present purpose, though in the absence of further details in the official statistics one cannot be quite certain. The Punjab official returns also give little help towards ascertaining the extent of the large import for the purposes of trade that flows into the Punjab from Calcutta, Bombay and Karáchi. The imports of Delhi, which are almost entirely from outside the Province, are estimated at 40 lakhs of gold and 60 lakhs of silver, but I am unable to give any details as to the sources of the supply. Amritsar imports 6¾ lakhs of gold and 29¼ lakhs of silver: the gold being mainly brought in the form of Russian "*bittís*" (value Rs. 12-4-0, weight 6½ *máshás*) through Bombay; Australian gold is also imported through the Union Bank of Australia, the Chartered Bank of Bombay, and the National Bank of India at Karáchi. Amritsar also imports a little of the gold known as Chinese. Not more than one-sixth of its whole imports is used locally; the rest being exported to all parts of the Punjab. Lahore imports 6 lakhs of gold and 7½ lakhs of silver direct *viâ* Bombay; and 2 lakhs of gold and 3 lakhs of silver through Amritsar. Mooltan, Ferozepore, Umballa and Pesháwar also seem to have some direct dealings with Bombay: and similar claims, though less sound, I fancy, are advanced by Shahpur, Muzaffargarh, Jhang and Ludhiána. The imports to Pesháwar from Bombay, Bokhára and Kábul aggregate some 2 lakhs of gold per annum, but a great part of this is not worked into ornaments but passed on in the regular course of trade. The imports from Afghánistán are said to show a very marked decrease since the accession of the present Amír: they are stated to have gone down to one-fourth of their previous amount, and to be now insufficient for the wants of the Pesháwar District alone. Hazára imports some Rs. 5,000 of gold every year from Chilás. The imports from Yárkand to Kángra are given as Rs. 4,000 of gold and Rs. 10,000 of silver; from Yárkand to Kulu as Rs. 5,000 of gold and Rs. 10,000 of silver, most of which is passed down to the Punjab; and from Yárkand and Bokhára to Lahore as one lakh of gold and half a lakh of silver. The Bokhára imports are in three forms: first, that of coins—*Russian*, *Bokháran*, *Kokan*, *Yárkandi*, *Babukhani Masbdi*, *Butki* etc.; secondly, gold sand from Khulm, Khotan and Kokand; thirdly, Russian gold wire or *kalábátún*. This last is bought in Bokhára at 5 *tillás* per bundle of 20 *tolás*, and sold in Pesháwar at Rs. 1-12-0 per *tolá*.

6. Internal Distribution of Gold and Silver in the Province.—The preceding paragraph makes it plain that the bulk of the gold and silver imported into the Province for the purpose of conversion into ornaments and the like must pass through Delhi, Amritsar, Lahore or Pesháwar. From Delhi the local markets of the Hissár, Rohtak and Gurgáon Districts are naturally supplied. In Umballa and Ludhiána the supply comes partly from Delhi and partly from Amritsar; some of the Umballa supply coming also by Patiála;

* In Umballa rupees stamped with the Queen's head are sometimes called Ghagrasháhí or petticoat Government rupees (*Punjab Notes and Queries*, Vol. I., No. 891).

Kángra, Siálkot and Gujránwála depend almost entirely on Amritsar: Gujrát gets its supplies either direct from Amritsar or through Gujránwála: Mooltan, too, besides a little direct importation, looks to Amritsar and Pesháwar for its supply: Jhang imports either from Mooltan or from Amritsar, and Muzaffargarh from Mooltan or Baháwalpur. Import from Baháwalpur to Mooltan has ceased; Baháwalpur itself is now dependent, as Dera Ismail and Dera Gházi are, on Mooltan. Jhelum gets its gold from Pesháwar and Amritsar, but its silver almost exclusively from Amritsar. So that for the most part Delhi and Amritsar divide the custom of the Province. Of the crore of rupees worth of gold and silver annually imported into Delhi, about a third is said to be re-exported in the shape of wire, lace, tinsel, etc., and the greater part of the remainder in other forms, that is, presumably, in the form partly of ornaments ready made, but more largely of bullion. There seems to be little or no export of gold or silver from Lahore. Gurdáspur is said to import no raw material, the better class of ornaments being procured by order or ready made from Amritsar and Lahore.

With a very few exceptions, therefore, every district in the Province is dependent for its supply of gold on one or other of the large centres, and the following figures will serve to show roughly the degree in which the supply is drawn upon in the various districts with regard to either of the two metals. The annual gold imports of the Rohtak District are valued at Rs. 1,60,000; of Umballa at Rs. 1,55,000; of Ludhiána at Rs. 3,50,000; of Siálkot at Rs. 1,00,000; of Jhelum at Rs. 40,000; and of Kohát at Rs. 3,000. The supply of Mooltan (part of which appears to be obtained direct from outside the Province) is put down at 2 lakhs. Similarly, the annual import of silver into Rohtak may be taken as Rs. 3,60,000; into Umballa as Rs. 3,40,000; into Ludhiána as Rs. 4,65,000; into Siálkot as Rs. 60,000; into Jhelum as Rs. 60,000; into Pindi as Rs. 2,84,370; and into Kohát as Rs. 5,000. The Mooltan supply is put down at 3½ lakhs; but part of this is obtained direct from Europe and part is again re-exported. The small proportion of silver received at Siálkot as compared with the gold is noticeable, and I have no explanation for it. Six lakhs of silver and gold are said to be imported annually into Jullundur; a lakh and a half into Muzaffargarh; and Rs. 67,000 into Dera Ismail Khan, but the annual fluctuations in the last named district are severe. It is estimated that of 2 lakhs of gold received annually in Mooltan, Rs. 70,000 are exported to Muzaffargarh, Dera Ismail, Dera Gházi, Baháwalpur, &c., and that of the 3½ lakhs of silver received, 1¼ lakhs are similarly exported, leaving Rs. 1,30,000 of gold and Rs. 2,25,000 of silver to meet local wants. Of a lakh of rupees worth of silver and gold imported into Jhelum about a half is re-exported to Bhera, Khusháb or Jammoo territory.

The common agency for the distribution of the precious metals is that of the *sráf*. The *sráf* is an indispensible complement to the *sunár's* trade. He is equally indispensible to the customer. Sometimes a customer will order his jewellery through the *sráf* and the *sráf* employs a goldsmith, but remains responsible for the work. In a few cases the *sráf* provides ready made jewellery, which is worked for him by goldsmiths whom he keeps on a monthly stipend. To a man who wants bullion to give to the *sunár* the *sráf* will sell gold and silver, or he will sell ornaments at the cost price of the metal. When a man has had an ornament completed, he takes it to a *sráf* (generally for precaution's sake, to the *sráf* of another village) for the *sráf* to test and weigh. The *sráf* for a small commission values the gold and silver and settles the price of the article. In the same way every goldsmith has his *sráf*: the *sráf* watches the fluctuations of the value of the metals; and being the great importer of bullion and wholesale vendor of old jewellery he is practically the goldsmith's bank. He advances bullion to the *sunár*, the amount to be payable after a certain interval; and if paid before the appointed time, discount is given; if after, interest is charged. In Jullundur the ordinary rate of discount for ready money is quoted at 1½ per cent., and interest at 7¾ per cent. Such advances are made when the goldsmith is in arrears with his orders; when the customer orders his bullion through the *sunár*; or when the customer cannot advance the full amount of the bullion required. In transmitting to the artizan goldsmith, the *sráf* will of course sell the metals at a profit. The extent of the profit is given

in Umballa at 8 annas per cent. on gold and 1 per cent. on silver; in Hissár it is put at 4 annas per *tolá* on gold and 8 annas per 100 *tolás* silver. The *ráf* has the reputation of being generally a trustworthy man; but as he lends to the goldsmith on little or no security, and his position as arbitrator on the goldsmiths' work is a tempting one, he is said at times to connive with the *sunár* to the detriment of the purchaser. He is at times too implicated in the melting down of stolen ornaments.

7. Material and Outturn.—The amount of ornaments broken up annually for re-use in Jullundur is valued at Rs. 58,890; in Jhang at Rs. 90,000; in Gujránwála at about Rs. 25,000; and in Hissár at Rs. 13,000 of gold and Rs. 22,000 of silver. The amount of raw material which, in one shape or other, is worked up into goldsmith's work during the year is estimated in Gurgáon and Jhang at Rs. 90,000 each; and in Peshawar at Rs. 2,25,000. Of gold alone Rs. 2,07,381 is said to be worked up annually in Jullundur; Rs. 27,500 in Kángra; Rs. 1,200 in Kulu; Rs. 1,30,000 in Mooltan; Rs. 4,00,000 in Lahore; Rs. 4,00,000 in Gujránwála; 50,000 in Jhelum; 50,000 in Hazára; 98,000 in Dera Ismail Khan; and Rs. 1,06,000 in Dera Gházi Khan. Of silver, Rs. 2,13,636 in Jullundur; Rs. 85,000 in Kángra; Rs. 3,600 in Kulu; Rs. 2,25,000 in Mooltan; Rs. 9,00,000 in Lahore; Rs. 1,70,000 in Gujránwála; Rs. 1,00,000 in Jhelum; Rs. 40,000 in Hazára; Rs. 1,65,000 in Dera Ismail Khan; and Rs. 1,09,000 in Dera Gházi Khan. Jullundur also works up Rs. 3,90,000 of "*Kandlá*" work and the like. Lahore works up five lakhs of gold and two lakhs of silver, "*gotá*," &c., while in addition to Rs. 3,63,000 of ordinary gold and silver work Rs. 25,000 worth of embroidery and lace is worked up annually in Gurdáspur. The amount used for silver-headed sticks in Nizámabad in the Gujránwála District is known to be Rs. 560. Mooltan works up Rs. 25,000 of *kalábátún* or silver thread, Rs. 800 of silver leaf and Rs. 60,000 of enamel work. The outturn in Jullundur is given as Rs. 2,07,381 of gold ornaments and Rs. 2,52,636 of silver ornaments and vessels; of which about $\frac{1}{30}$th is used as children's ornaments, $\frac{1}{250}$th as men's and the rest as women's. The total annual outturn in Umballa is taken at Rs. 1,81,399 of gold work and Rs. 4,76,798 of silver; in Hoshiárpur at 3 lakhs, Shahpur 4½ lakhs, Dera Ismail 3 lakhs and Kulu Rs. 6,000 of both metals. Rupees 2,56,000 of gold work and Rs. 35,000 of silver is given as the outturn for Peshawar, which is also said to turn out Rs. 1,000 worth of stone setting work.

I give the above figures for what they are worth; they are local estimates, and may serve as guide in estimating the provincial material and outturn. As regards the comparative outturn of the various branches of the trade, I have only the figures for Lahore and Delhi. The following are the figures for the main branches of the trade given in lakhs of rupees, the former figure being that for Delhi and the second that for Lahore: *viz.*, *Sunárs* 20, 11; *sádákárs* 15, 1; *matherás* 5, 1; *chiterás* 15, 4; *murassakárs* 10, 2; and *kandlakashes** 35, 7. These figures will serve to show fairly well the relative prevalence of each branch in the two cities and the proportion of the work as divided *inter se*. The outturn of the *tárkashes* is of course almost exactly that of the *kandlakashes*; that of the *dabkayás* is entered in Delhi at ten lakhs less. In Delhi the following figures are also given for the outturn in lakhs of rupees of the following further branches of the trade: enamelling 5, gilding and electroplating 7, *pardázsázi* 5, *jilakári* 10, *batayás* 5, *kináribáfs* 20, *thappasáz* 10, *salmasáz* 9, *sitárasáz* 1, *zardoz* 5, and *ilákabund* 5. In Lahore *lohárs* are said to annually turn out one lakh, *koftgars* and *bindlisáz* Rs. 1,000 each, *daftrikuts* Rs. 23,000 of gold and 2½ lakhs of silver; of *gota* and the like three lakhs are said to be turned out, and of *kalábatún* four lakhs.

8. Trade in the Manufactured Articles.—In ornaments proper as manufactured articles, there is, as will be seen later on in this monograph, hardly any carrying trade whatever, and as the import of such articles by private persons for their own use is not strictly an import at all in the commercial sense of the term, any figures given in this connection must necessarily lose a good deal of their value. There is, however, a true import and export of gold lace, wire and the like.

* All these terms are explained below.

The imports from outside the Punjab are few. Benares sends Rs. 1,000 worth of *kalábátún* yearly to Jullundur, Rs. 10,000 worth of *gokharu*, and Rs. 40,000 worth of *dopatta*, *kalábátún* and *kimkháb* to Lahore: Rs. 10,112 worth of *kimkháb* to Simla; some tinsel and gold lace to Mooltan and some *dopattás* through Amritsar to Dera Ismail Khan. Ready-made work (of which the description is not stated) is imported from Bombay to Bhera to the extent of Rs. 55,000 a year, and a good deal of Kashmír silver-work is imported into Amritsar. Rs. 30,000 worth of gold and silver lace, tinsel and *gota*, and Rs. 50,000 worth of embroidery, are imported annually into Hoshiárpur. Some of this is from Delhi and Amritsar; but a large part comes from Bareilly, Lucknow and Bombay. A little Bokháran *kimkháb* reaches Dera Ismail Khan; but the chief foreign imports there are Bokháran and Turkestání *kalábátún* and Turkish *kalábátún*. Of this latter, Rs. 5,000 worth was imported the year before last into Dera Ismail Khan. It is said to be really Russian and not to wear anything like so well as Bokháran *kalábátún*. Russian gold thread, however, as used by the Pesháwar *Lungi* weavers, is said to be superior to the Delhi thread. There are doubtless other imports which have not been noticed, but the above account shows the general direction and extent of the foreign imports. It is worth while also noticing the import into Rohtak from Jaipur of the *Sitá-Rámí* ornament, which is highly prized by the higher classes of Hindús there. It consists of a minature painting of Jagannáth set in a gold frame, with a beaded edge in the form of amulet or *táwíz*, to be worn round the neck. The annual import of these into the Rohtak and Sámpla Tahsils is put down at Rs. 2,000.

Of the export to places outside the Province, with the exception of that from Delhi, the only class worth mentioning is the export of enamelled work from Mooltan, which finds its way in the shape of enamelled beads, necklaces and *churís* to all parts of India and even to Europe. I have unfortunately no details of the export trade from Delhi. The most prominent form of the Delhi export is that in articles of ostentation which figure so largely in the State ceremonies of Haiderábád, Jaipúr, Udaipúr, Baháwalpur and the like. A certain amount (put down at Rs. 5,000 per annum) of *gotá*, *kinári* and *kalábátún* is exported from Lahore to Jammoo territory; to which some *kalábátún* from Mooltan also finds its way. Kulu also takes in some Rs. 1,000 worth annually of ornaments from Delhi, Patiála and Umballa, of which a good deal probably finds its way across the border into Central Asia. I have found no mention in any of the district reports of hindrance to export trade by the Russian duties or by the English Silverplate duties; and apparently the effect of these restrictive measures has had little or no effect in the Punjab on account of the extremely small extent of the export trade.

Then as to the internal transmission of ready-made work between the several districts of the Punjab. Delhi of course supplies a large part of the Province—for instance, Hissár takes yearly from Delhi Rs. 300 of lace at Rs. 2 a *tolá*, Rs. 200 of *dori* at Re. 1-6-0 a *tolá*, and Rs. 5,000 of silver ribbon (*nuqrái gotá*) at Re. 1-2-0 a *tolá* and Rs. 1,300 of gold ribbon (*talai gotá*). Gurgáon takes Rs. 80,000 of *gota*, *kinárí*, *thappa* and ready-made caps (*topís*) with *kalábátún* work from Delhi in the year. Umballa takes Rs. 17,400 of silver *gotá*, Rs. 19,219 of gold *gotá*, and Rs. 509 of *kalábátún* in the year, partly from Delhi and partly from Amritsar and Patiála. Jullundur imports Rs. 6,000 worth of *kalábátún*, *kaitún*, *kinárí* and *gokhru* from Delhi. The import of gold and silver lace, tinsel, *gotá* and embroidery from Delhi and elsewhere to Ludhiána has been noticed above. Mooltan imports from Delhi, Lahore, Amritsar and Benares tinsel and gold lace: the import of silver lace is Rs. 6,000, of *kalábátún* Rs. 15,000, and of *kaitun* Rs. 1,000. Rupees 3,000 of lace and *gotá* reaches Dera Ismail Khan every year from Delhi, and a great deal of gold thread (*kalábátún*) ornament goes to Simla. False ornaments and other miscellaneous articles amounting to some Rs. 200 worth a year are sent from Delhi to Muzaffargarh. Mooltan takes in from the same source some Rs. 2,000 of silver buttons, rings and *bázubands*: and in all districts like Hissár and Gurgáon which are within easy reach of Delhi by rail, most of the well-to-do inhabitants will import the better class of ornaments from Delhi instead of having them made up locally. In the Sámpla Tahsíl of Rohtak, the goldsmiths of outlying towns will take in ready-made ornaments of their own manufacture for sale in the Delhi market.

Where the custom in ready-made articles is not absorbed by Delhi, the supply is mainly from Amritsar and Lahore. For instance, Jullundur imports annually Rs. 4,235 of gold ornaments and gold leaves, Rs. 4,285 of silver ornaments, and Rs. 24,000 of *kandlas*, *kalábátún*, *kaitún* and silver leaf, from Amritsar. Hoshiárpur gets from Amritsar necklaces, rings and turban ornaments. Hazára gets from Amritsar Rs. 2,000 a year of gold and silver lace, thread, ribbon and edging, which is sold locally at a profit of two to four annas a rupee. Dera Ismail Khan gets Rs. 6,000 worth of *kimkhabs* and Banárasi *dopattás* through Amritsar in the year, besides being supplied from Amritsar itself with Rs. 3,000 of lace and *gotá*. The small pendants which the ladies of Dera Gházi Khan wear on their nose-rings are imported from Amritsar; Rs. 100 worth every year. Most of the Rs. 1,500 of electroplated ware which Gujránwála takes in annually is from Amritsar; and Rs. 40,000 of ready-made articles are received in Pesháwar annually from Amritsar and Ráwalpindi. Amritsar and Lahore supply Siálkot every year with Rs. 20,000 worth, and Ferozepore with Rs. 5,000 worth of made-up jewellery. Gold head-ornaments of the kinds known as *singharpatti*, *tikka*, and *dasti*, and nose-rings set with gems to the value of Rs. 3,000, find their way annually to Muzaffargarh from Lahore and Amritsar.

Mooltan turns out Rs. 25,000 of *kalábátún* in the year, a half of which it takes for itself, and with remainder of which it supplies Jhang, Dera Ismail Khan, Dera Gházi Khan and Jammoo territory. Mooltan of course must have a pretty general market for its enamel; but it would appear as though, even in the immediately adjoining districts, the demand in each case was very insignificant. For instance, although Rs. 2,000 worth of Mooltan enamel work goes to Dera Gházi Khan yearly, yet some Rs. 300 of enamelled rings represents all the export to Muzaffargarh. There is practically no trade in Kángra enamel: it is either employed locally or carried away for private use by the pilgrims to Kángra and Jawálamukhi; the amount so carried away is valued at Rs. 5,000 per annum. The quaintness of the Kulu ornaments induces English travellers to procure and take away a certain amount of these, but the amount is very limited, and if we value it at Rs. 400 a year we are probably making a very liberal estimate. If we further notice a few *attardáns* and gold nose-rings set with gems (*boola* or *balka*) sent from Baháwalpur to Muzaffargarh, some Rs. 20,000 worth of ornaments exported from the same place to Dera Ismail Khan, Rs. 2,000 of lace and *gotá* sent from Baháwalpur to Mooltan, some Rs. 18,000 worth of jewels and Rs. 4,000 worth of embroidered shoes sent to Dera Ismail Khan from Mooltan, Rs. 1,000 of *lungís* and Rs. 2,000 of caps and *kullas* received in the same district from Pesháwar, we have probably exhausted all that is worth mentioning of the intra-provincial transmission of ready-made articles.

9. Trade Organization.—The figures given by the district reports on this head are of such uneven value that it is best to fall back on the figures collected officially in 1881. There were then 44,338 workers and dealers in gold and silver in the Province. This distribution into classes and into town and country-workers is interesting—

	Towns.	*Villages.*	*Total.*
(i)—Gold-washers, diggers.—[*Soná nikálnewále: soná dhonewále: zarkash: sansoi: kairi: kambar: nyárya: soná dhonewále*].	18	157	175
(ii)—Gold and silver merchants—[*Chándi farosh: chándi, soná bechnewále: zewar bechnewále, &c*].	72	0	72
(iii)—Gold and silver-smiths.—[*Sunár: zargar: sádakar: zewar banánewále: gahná gharnewále: chándi sodhnewále: jhútá zewar banánewále, &c*].	11,464	27,245	38,709
(iv)—Gold and silver engravers, chasers.—[*Chaterá: chaterá zewar: chitr kárí*].	14	0	14
(v)—Gilders and platers.—[*Gilat sáz: mulamma karnewle, &c*].	45	0	45

	Towns.	Villages.	Total.
(vi)—Gold and silver foil-beaters, dealers—[*Zar-kob: koftgar*: warq chándi bechnewále, &c.*]	175	3	178
(vii)—Gold and silver wire-beaters—[*Kandlakash: dabkai: tárkash*].	1,033	17	1,050
(viii)—Damasceners†—[*Minákári*]	107	0	107
(ix)—Refiners;—[*Nyáryá: niárá dhona: sodha*]...	718	426	1,144
(x)—Gold and silver thread-makers, dealers—[*Kalábátún bunnewále: tilla sáz: kárigar zari, &c.*]	309	91	400
(xi)—Gold and silver cord, lace, makers, dealers—[*Zari báf: dori baf: tilla batnewále, &c.*]	753	52	805
(xii)—Gold and silver ribbon, cloth, weavers, dealer.—[*Gota bánanewále: kanári báf: tillá báf: gotá bechnewále: pemak bechnewále, &c.*]	1,585	54	1,639
Total‡ ...	16,293	28,045	44,338

Some of the information given later on in this monograph will throw a further light on these figures. Meantime it is worth noticing how entirely, or almost entirely, certain branches of work, such as that of the merchant of ready-made goods, and those of chasers, gilders, enamellers, and others, are confined to the towns. The fact is that it is only in towns that branches to the goldsmith's work are recognized; the village goldsmith confines himself to the simple forms of ornaments, and in country towns or large villages the same man will often turn his hand to what would in large centres be looked on as separate occupations, such as embossing, chasing, &c. Further, the goldsmith and the silversmith are almost universally the same; you will of course find men who are more adept at one metal than the other, but there is no recognized distinction between the two branches of the trade.

A goldsmith will as often as not sit in his shop alone, or at most will admit a relation or two; it is very seldom that he admits a stranger into partnership. The figures given by District Officers bring out an average of about five men to every two shops, and this for the Province at large is probably about right: though of course in villages it will often be found uncommon to have more than one man to a shop, while in centres like Lahore and Delhi the average works out to three men to a shop. The figures given work out a high average per shop in Shahpur and Dera Ismail Khan, also in Siálkot, but the Siálkot figures are especially audacious. Apprenticement is recognized: an apprentice presents his master on apprenticement with sweetmeats or a *pagri*: his term of service is not fixed in any way. The nearest approach to co-operation is in the wire-drawing trade: there are ten workshops of *tárkashes* at Delhi employing 20 hands and over, five of *dabkayás* and one of *batayás*, and you generally find eight or ten men to a *kandla* in this trade. In no other class of gold and silver work can the Province show a single workshop employing as many as 20 hands. The more elaborate work of other branches of the trade passes from hand to hand at each stage of the process.

I fancy that something over one-third of the total population engaged in gold and silver work is Mussalmán: and the proportion of Mussalmáns to the rest is greatest on the Western Frontier, and in the Delhi District where about half the workers appear to be Mussalmáns. The proportion among *sunárs* proper will be noticed immediately. The figures given by District Officers do not lead one to suppose that any particular branch of the trade is universally monopolized by any special religion; but they would imply that trades such as those of the embosser, chaser and jewel-seller were generally in the hands of Hindús or Sikhs, while *koftgars* and others are more usually Mussalmáns. In Delhi the *sádakar*, *zárdoz*, *kinári sáz*, *salma sáz* and *sitará sáz* classes are said to be exclusively Mussalmán.

* The word more generally applies to damasceners.

† Rather "enamellers."

‡ There are also 90 jewel-sellers (*mussakár: murassa sáz: kundan bánánewále: kundangar: jaryá*), all in towns.

The localization of the trade presents as many strange points as in other trades and other countries. For almost any species of article you can count on a supply at Delhi and Amritsar; and it is difficult to say that either of these places has a speciality. The work of Lahore, Pesháwar and Gujránwála has a celebrity of a very local character. For enamel Mooltan or Kángra is preferred: for inlay Kotli or Gujrát. If you want the best jewellery of Kulu you go to Dughilag near Sultánpur; and if you want a silver-headed walking stick you go to Nizámabad in Gujránwála District. The country town of Ráhon has a name for gold and silver ribbon; that of Pasrúr for *dori* and *kaitún*. If you want a good "*sonsehra*" or fringe for a bridegroom, you order it from Siálkot. You will find one town or village producing, or supposed to produce, one class of ornament better than another: some particular form of gold necklace is best made here, some special kind of silver earring there; nose-rings here, finger rings there, and so forth; without any imaginable reason being assigned for the phenomenon. But one finds very little trace of a transference of trade to new centres. The enamel work of Maghiána, and that of Dhamtaur and Naushahr in Hazára, is gradually expiring, but one does not hear of any trade springing up elsewhere to take its place. An immigration of Hindu craftsmen from the north has been noticed in Montgomery: some Sikh stone-setters have recently left Lahore for Mooltan; and there is said to be a small emigration from Lahore and Mooltan to Dera Ismail Khan. But on the whole the trade is stationary, and the goldsmith with all his astuteness and avarice remains, like other men, a very difficult piece of luggage to transport.

10. The Sunars as a Caste.—Talking of the *sunárs* at para. 634 of his Census Report, Mr. Ibbetson says that they would appear to be a true caste: and the information now forthcoming seems to confirm in a sense this surmise. In parts of the country we find Jats and even Biluchís working as goldsmiths, but they are classed as separate from *sunárs* proper; and a *sunár* himself becoming a *munshi* or clerk, although he may pass himself off as a Khatri, always remains a *sunár* in the eyes of the people. Even in the case of the Mussalmán tribes practising as *sunárs*, noticed below, the interfusion with the original *sunárs* is far from complete. The *sunárs* are very uniformally and widely dispersed, being found in nearly every village, and yet it is quite exceptionally* that they ever appear as village servants receiving a share of the produce from the cultivators. In Kulu the *sunárs* nearly all own land, which they would seem to have acquired and settled along with the other families of the village to which they belong. "The *sunár*," says Mr. Ibbetson, "prides himself on being one of the twice-born, and many of them wear the *janeo* or sacred thread; but his social standing is far inferior to that of the mercantile and most of the agricultural classes, though superior to that of many, or perhaps of all other, artizans. In Delhi it is said they are divided into the Dase who do and the Deswale who do not practise *Karewa*:† and that the Deswála *sunár* ranks immediately below the *Banyo*. This is probably true if the religious standard be applied; but I fancy a Jat looks down on a *sunár* as much below him."‡ In Kohát the Hindu *sunár* is said to be equal in position to the Arora: and the Mussalmán *sunár's* rank is above that of the Mussalmán menial castes.

As stated in the Census Report, the *sunár* is very generally a Hindu throughout the eastern plains and the Salt Range tract, though in the (old) Mooltan Division and on the frontier he is often a Mussalmán, while in the centre of the Province there are a few Sikh *sunárs*. The caste contains both Hindús and Mussalmáns, but outside the caste proper it will be found, as is the case in Mooltan, that among Muhammadans a man of the Khoja, Sheikh, Mogal or any other class may practise as a *sunár* and be called a *sunár* without losing his right to intermarry with his co-religionists. Among the Hindu *sunárs* a large number in the Mooltan and Jhelum Districts are Shamsís or followers of Shams Tabríz: they themselves keep separate from the Muhammadans, and are in

* The *sunárs* will be found classed as village servants in one of Mr. Purser's Jullundur Assessment Reports.

† In Hissár the *sunárs* are divided into Desi and Bágrí, but the only distinction is that the latter cannot do the fine (*bárik*) work: the former do.

‡ See para. 229, Karnál Settlement Report.

turn looked on practically as Muhammadans by other Hindú *sunárs*, who will not eat or intermarry with the Shamsís. The legend is that a *sunár* prayed to Shams Tabríz for a son; and all his descendants are called Shamsís; and in fact there can be little doubt that the Shamsís were originally ordinary Hindú *sunárs*. They do not seem, however, to have preserved any separate caste divisions amongst themselves, or at least such castes are no longer recognized: in Peshá-war the Shamsís are classed as one of the subdivisions of Hindú *sunárs* along with Dhedis, Ajatís and the like.

The main division of the *sunárs* recognized in the Punjab is that into Mair (Mer, Mahipotra, Mahar) and Tánk: these two divisions will not intermarry or smoke with each other. The Mair are found mainly in the Punjab Proper; there are no Mairs, for instance, in Kulu or Dera Ismail Khan. The Mairs are apparently the original *sunárs*, while the Tánk are probably, as they profess themselves to be, degenerate Khatrís or Aroras: but the point is not at all clear. In Simla it is said that a Khatrí will smoke from the same *hukka* as a *sunár*. It can be understood, however, how in Hoshiárpur the Mairs are looked on as springing from the Jats and inferior castes: while a travelling Mair in Dera Ismail Khan is looked up to by, and receives alms from, the resident Tánk *sunárs*. There are two very similar myths—equally unoriginal and unappetizing—about the origin of the Mairs. According to one story, the goddess Devi constructed a man out of the dirt and sweat of her forehead, and bade him destroy a golden demon who was persecuting her: this man—who was in fact the *Ur*-Mair—polished up the demon's nails with beads while the demon was asleep; and so delighted the demon that he induced him, in order to make the whole of his body shine like his nails, to sit on a charcoal fire. The unsuspecting demon thereupon melted away, and the goddess presented the Mair with the gold mass which represented all that was once the demon. The Mair, like a true *sunár*, grumbled at the inadequacy of his reward, and the goddess cursed him in consequence; with result that his work does *not* prosper to this day. The other version represents the Mair as having been made from the scum (*mail*) of dirt and soap or paste scraped off the body of a holy woman or "*mai*": and as having rescued her from a golden demon by throwing the demon into the fire. In this version a *sráf* seizes the golden ingot, and the Mair, who contented himself with the stray pieces of gold, received the *Mai's* blessing, so that he *does* prosper to this day. In both versions the Nyárya (regarding whom more below) is said to have slunk up afterwards and to have extracted gold from the ashes of the fire. The Tánk generally represent themselves, as the Aroras do, to be Khatrís by origin, who changed their title in the persecuting era of Paras Rám, the great enemy of the Khatrís. The chief subdivisions of the Tánk are the Bunjáhí and Bárhi, which are also the names of prominent subdivisions among both Khatris and Aroras. The Mair *gôts* generally contain both Mussalmáns and Hindús: while the Tánk *gôts* are generally confined to Hindús.

The following are the 48 subdivisions of the Mairs as reported from Lahore: Jálu, Dhalle, Masawan, Sarwana and Sur, Dhune, Sunák, Nichol, Ludhar, Babar, Ahat, Karwal, Manan, Mitru, Nál, Suchú, Dáwar, Bhulle, Suse, Ahi, Ballan, Dharna, Sarna, Shín, Udera, Sadeuri, Khurnee, Kandi-vaddí, Chal ageri, Hauzkhawasí, Pidrí, Kingar, Malhaddí, Rodi, Kande, Khich, Basán, Rudke, Gund, Rete, Ledhe, Partole, Wurar-Kokre, Ratte, Main, Vaid, Nagaurie, and Tauri-wal: of whom the Dhalle and Sur alone are exclusively Hindús. And the following those of the Tánk *sunárs*, *viz.*, Mittu, Viru, Rodkí, Bhole, Rasín, Ratre, Ochí, Ajátí (or Che-játí), Thande (or Panj-játí), Samnu, Janjoge, Akásh-mohle, Bunjáhí (divided into Mehra, Sanduria, Bobal, Kakki, Tráme and Chánglí), Bahrí (divided into Kokal, Katarmal, Gidar, Kaun, Ujaimal, Salgotia, Teju, Khich, Gijar, A'hat, Thothre, Patní, Samánia and Hichar), Panjjáti (divided into Bhopale, Batti and Botan) and Sunak; all of whom are exclusively Hindús except the Sammí. In Hoshiárpur the Tánk *gôts* are said to be the Gojaní, Kanot, Bhagha, Pholu, Kashri and others unspecified. In Dera Ismail Khan the Mussalmán *sunárs*, who are said to have come from the Chenáb in the Jhang District, are reported to be of three subdivisions—the Dharne, Katarmal and Nahár, which are also subdivisions of the Aroras. The Hindú *sunárs* of Dera Ismail Khan are divided openly into Khatrís and Aroras: of whom the Khatrís are subdivided into twelve *gôts* (eight of which are found in the district),

and the Aroras into nine. Of the eight Khatri *gôts*, five—the Sarne, Dhande, Ajoti, Akásmole and Kan—will not intermarry with any of the remaining three, the Makhu, Nukra and Bobál. Similarly although all the Arora *gôts* of the *sunárs* call themselves Uttarádhís, yet six of them (the Bútte, Súchche, Dhaneje, Malpaní, Battan and Ragte) will not intermarry with the remainder—the Chandpul, Taramine and Lodar—whom they look on as Dakhinís. In Peshá-war the divisions of *sunárs* given are: for Hindús, Itan, Waid, Dangai, Gond, Darberai, Lugí, Bobal, Ranger, Sandhari, Shamsí, Dhedí, and Ajatí; and for Mussalmáns, Báhár, Ríte, Liláb and Gharwál. In Ferozepore the Mair *gôts* are given as Sedhi, Maháich, Thákrán, Guggar, Jhangí, Dhariwál, Sunnak and Karor; the Tánk *gôts* as Thothre, Ahat, Khich, Ajemal, &c.; and the Bunjáhís as Dhanne, Sur, &c. In Shahpur the divisions are Chopra, Kapúr, Dhaun and Sont; the first three of which are purely Khatri divisions. I give all these names for what they are worth; and more still are to be found in the Lists of Tribes and Clans published from the returns of the last census. It would be interesting to compare these different lists and to see what inferences could be made from the similarity of the names of *sunár* subdivisions to those not only of Khatris and Aroras, but also of other castes. But this requires more time and experience than I have at my command.

11. The Character of the Sunars.—The *sunár* is not appreciated by his customers, and the popular ideas about him are not flattering. Stories of his craft and unscrupulous rapacity are in every one's mouth. In the towns the *sunár* always works in his shop; but in the villages a careful zamíndár will have the *sunár* to his house to do his work for him, or will sit over him in his shop till it is done. Even then he cannot be sure of him. In Lahore they tell how the *sunár* made the gold of his own Guru disappear before his eyes and then complimented the Guru on his miraculous powers. There are one or two stories about the *sunár* and his deception which are told all over the Province. One very common one is the tale of the *sunár* who made a *hass* or necklet for his mother without alloying the metal. The harassing thought of his lost opportunity reduced the *sunár* to a skeleton, and it was only when his mother divined the cause of his illness and broke the necklace in order that he might have it to mend, that the *sunár* retrieved his lapse into virtue and brightened up again. All sorts of little variations are introduced into the framework of this story: one only is worth mentioning, and that is a characteristically blood-thirsty one from Pesháwar, which represents the ornament in question as a nose-ring, and says that the goldsmith recovered it by cutting off his mother's nose when she was asleep. Another very common tale is that of the *sunár* (or some say the Sanák, a subdivision of the *sunárs*) who went to visit the shrine of Badri Naráín in Garhwál and, finding that his iron ring on touching the statue became gold, cut off one of the god's fingers for his private use; but the stump began to ooze with unmistakeable blood, and from that day to this no *sunár* dares to come near the idol for fear of being struck blind. All over the Punjab, too, one finds a proverb telling you to keep your hand on your purse when you see a goldsmith the other side of the river. In Kulu they tell a somewhat inconsequent tale how a Sádh, seeing a *sunár*, swam across the river with his rupee between his teeth, and finding afterwards that he had so marked the rupee with his teeth that he could only get 14 annas for it, rather unreasonably vented his anger on the *sunár*. A *zargar* if he gets a broken head will make money by it. He is never fully honest. In Montgomery they say that if he is fully honest he is only half so (*sunára kadí nausárá : jo sárá, so ádhá*). In Kángra a collusive quarrel is known as *jang-i-zargarí*. But they sing in Gurgáon an "address to a goldsmith" which is the most unkindest cut of all, beginning "*Terí bát men dagha; tere háth men dagha; terí zát men dagha.*"

The *sunár*, too, in common estimation, is inhospitable and a curmudgeon: has no sympathies, and is nobody's friend. The tailor, the goldsmith and the doctor, they say, have no sympathy for their fellows. There are several calculations as to the number of goldsmiths it takes to make a *thag* and so on. In Jullundur they say *sunára kattiára* (the goldsmith is an alloyer): *sunára kis ká yár* (and no one's friend). In Montgomery, if you hesitate about trespassing on your host's hospitality for a second meal, he says to you "*Koi suniárán dí rotí hai*"—"Are you a sunár's guest that you should expect

only one meal?") The *nyárya* is, of course, a still more perfect type of parsimony.

The *sunár*, too, is generally "known to the police." He is as often as not a receiver of stolen goods: a man who melts stolen jewellery and takes part of the profit. He shares this reputation with the *sráf* and the *tezábia* or refiner of old ornaments; and he bears this character in almost every part of the Province. There is said to be a "*zargarí*" or thieves' language employed by some *sunárs*; but the reports give no information about this.

The *sunár* has a further curious trait. In Jullundur they call ornaments *takkáda*,—things that cannot be got except by *dunning*,—and the *sunár's* procrastination is a favorite topic. The truth is that he is as often as not in debt, and uses the silver given him for to-day's order in making an ornament ordered last month, and so on.

12. Prosperity of the Trade.—The people hold that the *sunár's* malpractices have entailed on him the curse of poverty. Be the cause what it may (and it is quite as often the poverty that leads to the malpractices), there is no doubt that the *sunárs* as a class are poor. If you find a *sunár* in prosperous circumstances he is sure to have gained his wealth not by his trade, but by money-lending, agriculture or some other extraneous occupation. The number of *sunárs* receiving an income over Rs. 500 a year can be ascertained from the income tax assessments: the number assessed in Rohtak is four or five only; in Gurgáon seven; in Jullundur nineteen; in Kulu nine; in Montgomery eight; in Amritsar twelve; in Simla three; in Ráwalpindi twenty-seven; in Kohát three; in Muzaffargarh thirty. In most of these cases the *sunár* is taxed at the lowest rate, and in many he is taxed on the profits of forms of enterprize other than his own trade. In Jhang only 12 *sunárs* out of 545 are taxed. In Umbálla 50 *sunárs* are taxed at a total sum of Rs. 661, but of this only Rs. 130 represents the taxation of the *sunár's* proper trade. In Amritsar there are ten *kandla-drawers* who pay a total of Rs. 192. In Mooltan two-thirds of the enamel workers and four stone-setters are subject to the tax: but only 5 per cent. of the goldsmiths are assessed, and they only at the lowest rate possible. The goldsmith pure and simple is therefore no capitalist. From Hissár, Shahpur and other districts complaints are made of the difficulty which the *sunár* now finds in making both ends meet: and it is only in a few tracts, such as Rohtak, Kulu, Ludhiána and Gujránwála, that a real influx of prosperity is acknowledged, and even then we are told that it is not so much by his wares as by his agriculture or his banking or his receptivity in the matter of stolen goods that the goldsmith is advancing. Our forty years of peace have had a threefold effect on the goldsmith's trade, and though the results have been on the whole advantageous to the goldsmiths as a class, they have displayed themselves so gradually and unevenly as to leave ground for complaint. The first tendency of our rule has been the repression of the more markedly ostentatious and barbaric forms of the art. The princelings of the Kángra neighbourhood can no longer afford to support the stone-setters that used to find a livelihood at their hands. Lahore is giving up its painting in gold: and Gujránwála its embroidered saddle cloths. The *koftgari* or inlay of Gujrát and Kotli is no longer what it was: and is only kept alive by a fitful and indiscriminating European custom. And the taste for ornamentation of the male population in our cities has in pursuance of the same influence greatly sobered down. A second tendency of our rule is a tendency to improvement in the make and material of the better forms of gold and silverware. In Delhi and Lahore the trade of all the better forms of jewellery is in good condition and men acquainted with them are in no fear of want. The *kandlakash* owes his high, though fitful, profits partly to this and partly to the secrets that render his trade more or less a monopoly. To the goldsmiths of county towns this increase in the prosperity of the better classes of work is discounted by the opening of communications, and the concentration of work, more especially of wire and lace work and the like, in large centres. The third and most noticeable feature of the trade under our *régime* is the enormous development afforded to the simplest forms of wearing-ornaments among the lower and poorer classes of the people. We have therefore a decrease in the merely ostentatious class of work: an increase but a concentration of the better forms of ornament industry, and a large development of

the simplest and coarsest kinds. As regards the *sunárs* as a class the effect has been generally beneficial, but, as noted above, the results are at present being worked out gradually and unevenly.

13. Wages and Profits.—The general practice in the Punjab—a practice which in Pesháwar alone is noted as exceptional—is to provide the goldsmith with the material on which he has to work and to pay him for his work at a rate per *tolá* on the weight of the finished article. The "wages" of a goldsmith are therefore practically the payment of his labor only, and the payment is regulated according to the nature of the labor required. In some tracts we find two rates employed—one for solid, unsoldered work, and another for the finer work which requires the soldering together of separate pieces In others the test of soldering is not applied, and the rates vary merely according to the ease or difficulty of the work. Elsewhere, and especially in large centres, each different kind of ornament will have its separate rate per *tolá* for cost of workmanship. And of the sum per *tolá* which the purchaser disburses a fixed proportion or a lump sum will often go to the embosser, the *máthera*, or some other craftsman who aids in the production of the ornament. As a specimen of the rates charged, I append in a note a list of the prices in Lahore for some of the principal kinds of ornaments.* The general rates of the Province vary for silver work between 3 pies and 2 annas; the rate is higher in Mooltan, Jhang, Kulu and Umballa, and in Kángra as much as six annas per *tolá* is sometimes charged for the better class of work. The rates for gold are not quite so uniform as those for silver, but the rate charged will generally be found to lie between 4 annas and 1 rupee per *tolá*. In some parts of the Province work of a sort is done for as little as 1 anna per *tolá*; and in others we find rates ranging as high as Re. 1-8-0 and Rs. 2. In Simla it is customary to pay what is called *garái*, a percentage on the value of the made article at 2 pice to 4 annas the rupee.

The system of payment by the day will only be found in places where the goldsmith accepts orders of a larger amount than he is able to carry out unassisted; in which case he will employ labor at a fixed daily rate. Such instances are rare; and to gain a conception of the daily earnings of the craftsman we have to fall back on his own statements regarding the amount which his work brings in to him daily on an average. On this authority we can estimate the average daily earnings for ordinary *zargar's* work in Amritsar at 8 annas; in Delhi they would vary between 4 annas and a rupee; in Lahore between four and ten annas. In the smaller towns it is rare to find more than 8 annas made per diem; and in the country shops rarer still.

The actual profits of the trade constitute a matter on which it is of course still more difficult to get definite information. The wear of tools, consumption of charcoal and the like constitute roughly the outlay incurred by the goldsmith, and he lives on the balance of the proceeds of the rates charged. The expenses of manufacture are calculated in Umballa to be ½ per cent. in silver and 1 per cent. in gold work, but how far this estimate can be accepted generally I cannot say. The net profits in most districts fluctuate little, if at all, from year to year; in Hissár we are told that they have not altered in the last fifty years. When the purchaser employs the craftsman to procure him the gold and silver on which to work as well as to do the work itself, the latter gets further opening for profit. The goldsmith will sell a little dearer than he bought from the *sráf*; and the *sráf* in his turn makes his own profits. Of the

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* GOLD ORNAMENTS.—*Kara sáda*, or plain bracelet, 2 annas per *tolá* of gold, of which ¼ anna goes to the *chitera*; *kara jarau*, or jewelled bracelet, one rupee per *tolá*, of which the *chitera* takes half; *gokharu*, or serrated bracelet, two annas a *tolá*; *chúrá bángánwála* or *akaira kaintha*, a ribbon-shaped bracelet, 1½ annas a *tolá*, of which the *chitera* takes ¼ anna and the *lohár* one pice; *chúra chúhedandi* and *chúra chaurathappa*, one anna per *tolá*; *báhi*, or solid tube-like armlet, 6 annas per *tolá*, of which the *chitera* takes half; *paunchi*, or beaded wristlet, 12 annas per *tolá*, of which the *chitera* takes 8 annas; *chankangan*, 12 annas a *tolá*; *pariband* 8 annas a *tolá*; *tádán sádían*, or plain armlets, 6 annas per *tolá*, *chitera* taking Re. 1 a pair; *bázúband*, 12 annas a *tolá*, of which the *chitera* gets Re. 1 a pair; *arsí jarau*, or jewelled thumb-ring, 8 annas a *tolá*, of which the *chitera* gets half; *ratan chauk* or head ornament, 12 annas a *tolá*; *anguthi* with one stone 4 annas, and with nine stones *(naunági)* 8 annas.

SILVER ORNAMENTS.—*Kara* and *gokharu*, two pice per rupee, of which the *chitera* gets half; *chúri chuhedandi* (*tehra thappa*), 2 pice per rupee, of which ¼ pie goes to the *lohár*; *paunchí*, 2 annas per rupee, of which the *chitera* gets a lump sum of 4 annas; *band thappawála*, 2 pice per rupee; *chankangan* and *pariband*, 2 annas a rupee; *tád*, one anna per rupee; *bázúband*, 2 annas per rupee, of which *chitera* takes 4 annas down; *bhawatta*, 2 annas a rupee, *chitera* taking 3 annas down: *báhi*, 1½ annas per rupee, of which ⅓ goes to the *chitera*; *arsi*, 2 annas per rupee, of which one anna goes to *chitera*: *angúthi*, one anna.

sráf and his profits I shall be noting further below; in Lahore his profit is put down at an anna in the rupee or 6¼ per cent. The goldsmith's profit appears to vary in gold from 4 to 8 annas a *tolá*, or about 1 to 2 per cent., and in silver from ½ anna to 1 anna or about 3⅛ to 6¼ per cent. For instance, if the *sráf* provides gold at Rs. 24-8-0 a *tolá*, the goldsmith would charge, say, Rs. 24-12-0, or 25; and for silver provided as Re. 1-1-9 per *tolá*, he would charge, say, Re. 1-2-3, or Re. 1-2-9. Then, again, if the purchaser provides his own material in the shape not of metal bought from the *sráf* but of old ornaments to be recast, then the goldsmith is considered entitled to a due of 4 *rattís* per *tolá* of silver and 1 *ratti* per *tolá* of gold; which he will take by retaining $\frac{1}{24}$th part by weight of the ornament if it is of silver and $\frac{1}{90}$th if it is of gold. Such at least is stated to be the custom in Gujránwála, and it is probably acted on with local variations elsewhere. And besides the legitimate profit procured in this way, the goldsmith has always open to him the profit to be gained by surreptitious alloying and the like, regarding which complaints are only too common.

The above refers merely to the wages and profits of common ornament-making. In the other branches of the trade different rates prevail. Setting of jewels, for instance, will be charged for either at a rate per stone set or at a rate per *tolá* of the weight of the completed ornament. In Umballa 1 to 4 annas is charged per stone, and in Ludhiána 12 annas per *tolá* on the weight of the piece. In Jullundur the charge is apparently Rs. 3 a *tolá*, in Amritsar it is Rs. 6 per *tolá* of gold used in setting, and Rs. 4 per *tolá* of the same for false gems. In Delhi the stone-setter makes 4 annas to one rupee a day, and in Dera Ismail Khan 8 annas to one rupee. In Jhelum he gets an average daily wage of 12 annas and in Amritsar 8 annas, while in Lahore he is said to get Re. 1 to Rs. 2. For ornaments set or studded with stones a combined rate will often be charged varying from Rs. 3 to 6 a *tolá*. In Mooltan, where this form of industry brings in 6 to 12 annas a day, the rate charged is said to be from Rs. 4 to 6; in Gujránwála from Rs. 4-8-0 to Rs. 5, and in Gurdáspur from Rs. 3 to 4. For enamelling the charge in Mooltan is 4 to 12 annas per *tolá*, bringing in some 4 to 6 annas per diem; in Delhi the daily income lies between 4 annas and a rupee. The in-layers of Siálkot make 6 to 8 annas a day, and those of Lahore 8 to 10 annas. A *kandla-drawer* in Delhi makes 4 annas to 2 rupees a day, in Lahore Re. 1 to Rs. 2; and in Amritsar he can draw 3 to 4 *kandlas* a day at Rs. 2 each, but is not certain of continuous employment. A *tarkash* at Mooltan charges 2 annas a *tolá*; at Delhi he makes 2 to 4 annas a day; in Lahore 2 to 6 annas and in Amritsar 8 to 10 annas. Makers of gold ribbon (*gota*) get about 4 annas a day in Siálkot; in Umballa the wholesale profit on the sale of *gota* is Rs. 9-6-0 per cent. gross, or, after deducting carriage, commission, octroi, etc, Rs. 6-4-0 per cent. net; the retail profit is put down at 15 per cent. In Mooltan capitalists provide machines for drawing the *kandlas*, and pay their employés (three of whom go to a machine) four rupees a month each, for 6 hours work a day. The wage at Mooltan for making *kalábátún* is 2 annas for one *tolá* of silk and one *tolá* of silver, the profit is put down as 3 pie to one anna per *tolá*.

And so on through the other branches of the trade. It will probably be sufficient to note the following rates of daily pay which are reported from Delhi and Lahore, *viz.*, Delhi—*sádakárs*, 4 annas to 2 rupees; *materas* and *chiteras*, 4 to 8 annas, *pardázsáz*, *mulammasáz* (gilder), *jilakár* (polisher) and *ilákaband*, 4 annas to 1 rupee; *dabkaya* and *zardoz*, 3 to 6 annas; *batayás* 3 to 4 annas; *kinárisáz* 2 to 6 annas; *thappasáz* 4 to 7 annas; *salmasaz* 4 to 8 annas; and *satárasáz* 4 to 6 annas; Lahore—*sádakárs*, 8 annas to 1 rupee; *materas* and *dabkayás*, 4 to 8 annas; *chitera* and *lohár*, 8 annas to 1 rupee; *baigari and kináribáf*, 4 to 6 annas, *tillavat*, *nyárya* and *daftrikut*, 4 to 5 annas, *tezábia* and *gilatsáz* 1 to 2 rupees; *nakásh*, 8 to 12 annas; *devalikash*, 4 to 10 annas; and *bindligar*, 12 annas to 1 rupee.

14. The Goldsmith's Weights.—The common measure is that of eight *rattís* to a *másha*, and twelve *mashás* to a *tola*, but it requires a far more detailed investigation than that conducted on the present occasion to give anything like an accurate account of the various meanings given to, and the departures made from, this scale in different parts of the country and different branches

of the trade. You find, for instance, that a *tolá* in Umballa and Jhelum is looked on as the weight of a Government rupee *plus* two *ratís*. In Kohát the *tolá* for silver is Government rupee, while for gold it is 4 *ratís* heavier. So also in Dera Ismail Khan there are only 7 *ratís* to a *másha* for gold; so that a *tolá* of gold is equal to only 84 *ratís* or 10½ *máshás* of silver. The *rati* itself, the basis of the scale, is an uncertain quantity. It should by rights be the weight of the seed of the *Albus precatorius;* but in Ludhiána it is taken as 2 grains; in Lahore as 4 grains of wheat or 8 grains of rice; in Siálkot and Muzaffargarh 4 grains of wheat; in Pesháwar 8 mustard seeds, and so on. The dishonest goldsmiths of course have heavy *ratís* for buying and light for selling, though the difference in weight is infinitesimal. Similarly, you will often find a goldsmith trying to sell by the rupee, as though it equalled a *tolá*, when in his buying he would count it as less.

Every goldsmith has his *kánta* or *kánti*, the larger or smaller scales, for weighing; the body of these is of iron and the bowls of brass; the bar being sometimes of steel. They are sometimes locally made, but usually are procured from large towns. For instance, those used in the Siálkot District come mostly from Delhi. They are very carefully kept in wooden boxes to prevent them getting crooked. The weights used are the ½ and ¼ *rati*; 2, 3 and 4 *ratís;* the *másha*, 2, 3, and 6 *máshás*; the *tolá*, 2, 3, 4, 5, 10, 20, 50 and 100 *tolás*. Many goldsmiths dispense with some of these; for instance, the 4 *tolá* pieces seem to be rare, and pieces above 20 *tolás* are seldom required. The goldsmith will keep about 12 or 10 *rati* weights; for amounts over a *tolá* he will often have an unrubbed Government rupee, giving the due value as above noted. The larger weights are of brass, but the *máshás* and smaller weights are more usually of broken porcelain.

15. The Goldsmith's Instruments.—Mr. Powell at pages 164 and 165 of his *Punjab Manufactures* notices the chief instruments used by the ordinary goldsmith. He mentions his hammer (*hathaura*), his blow-pipe (*nál*), forceps (*sannu*), mould (*reza*), bladed pincers (*katíra*), long curved pincers (*sanni*), straight heavy pincers (*zambúr*), and small square headed hammer (*chaurási*); also his stamp dies (*thappás*), his crucible (*kutáli*), and his two pointed anvil (*ekwai*), and his various *chisels*, the *chúrna*, the *chaini*, the *kanerna*, the *lurta*, the *thalna*, the *gulsam*, the *golra* and the *súmbha*. And at page 169 he incidentally mentions also the rubber (*moharí*), the files (*sohán and ráwati*), the iron pincers (*chimta*), the scissors (*káth*) and the compasses (*parkár*). I need make no further mention of the above, most of which are described in *Punjab Manufactures*, and this paragraph will be mainly devoted to noting the names of instruments not already mentioned there. For instance, there are the bellows (*khal phúkni*) and the small forceps (*chosth*). There is also the hair hand-brush (*balainchi or kuchi*): the *kuchi* is of hog's hair and Mussalmáns substitute for it a brush of khas or of the rootlets of the *ját tree*. The *zambúri* is a smaller kind of *zambúr;* and the *chimti* a smaller kind of *chimta*. In Kulu large pincers are known as *sensu*, and small pincers as *sensi*. In Dera Ismail Khan there are small crooked-bladed pincers known as *kawa-changí* or crow's claws. There is an implement, the *sundan* or *sandrán*, which seems to be the same as the *ekwai* or pointed anvil; and there is the *dastpana*, a long curved pair of pincers, the same as the *sanni*. The *katira*, or bladed pincers are also known as *katyás*. A *banknal* is a blow-pipe smaller than the *nál* and curved at one end. The file is also known by the common name of *reti;* and in Kulu there is a kind of small hammer called *tora*, which seems different from the ordinary kinds. The *trakla* is a pointed iron tool; the *kuchhar* is a round-headed hammer; the *jilaini* is an instrument for polishing minute silver work; the *tohna* is a blunt headed iron punch used with the *makál* noticed below; the *salai* or *shalai* is a boring-stob thrust through the loops of filigree work to keep them parallel; a *kundi* is a stone cup; *pot* are glass beads for polishing massive jewellery; and *bhodál* are plates of *mica* or talc (*abrák*) on which to fix in clay with their points upwards the minute parts of an ornament or chain which are to be fused together. Besides the above the goldsmith has a variety of instruments which are practically moulds or instruments of the form to which the metal is to be shaped: such as the *pansa* or bell metal cube on which he shapes *topís*, *katorís*, *ghungrus*, etc.; the *kalhata* or wooden cylinder for framing

karás, *bálás*, etc.; the *makkál* or collection of moulds for rounding beads, etc.; the *katká killi* or tapering wooden cylinder about which wire is wound; the *mathni* (round), *kabia* (hexagonal) *gazi* (for making hooks), *athulna* (round), *balma* (for grooves), *moti*, *patriní*, or *patarni*, *kandali* or *kandwáli*, *jalbist*, *talidána*, *tirkut*, *challadár molí*, *kangalola*, *maroridár*, *phorwan*, *bhedi*, *dáruwad* and *darikánsi*, and so forth. His *thappás* or dies are distinguished according to the object they are intended to produce, as the *thappa chúri*, the *thappa angúthia*, *challa*, *mundri*, *táwíz*, *cheki*, *kara*, *chotiphul*, *wálí*, *takhtián*, *tawítri*, *bhawatta*, *jambor*, *tredhára*, *tika tilái*, *kadhi* and other *thappas* innumerable. The words *katori*, *kimchi*, *tawai* and *arore* are also given in various districts as the names of instruments used by the goldsmith, but I have no information as to their use and properties. The instruments used in the more elaborate processes of *kandla-drawing* and the like are noticed in Mr. Baden-Powell's book; the wire-drawing machine there described differs a little from that used in Hissár, and there are perhaps other instruments also in which local variations from the types described by Mr. Powell may be found.

Most of the goldsmith's instruments are made of *kánsi* or bell metal though iron instruments too are often used. They are generally, I fancy, made up in the larger towns only; those used in Kulu, for example, are brought by *nyáryás* from Amritsar. The *kutháli* or crucible which figures so prominently in the processes of alloy and purification described below is made of cotton or munj-ends, and chalk or good clay pounded together and beaten on to a piece of wood known as the *ganath*. The general name for the goldsmith's implements in Kulu is *shandar*; and his tool-bag is known as *shandra lárí*. In Dera Ismail Khan and elsewhere the goldsmith keeps his instruments in a wooden almirah with drawers, and his spare gold and silver he puts in a box (*peti*) with compartments, which he takes home with him from his shop every evening. He also has some spare brass wires for tying the joints of hollow ornaments, and some little boxes (*dibbi*) containing cotton to put gold and silver into. These with his wood, charcoal, *angíthi*, and the implements above mentioned and the materials about to be noticed, constitute his whole equipment.

A goldsmith in the ordinary line has not a large stock of materials. For purifying gold and silver he requires some or all of the following:—Salt, saltpetre, red earth (*geru*), brick dust (*surkhi*), alum, blacksmith's ashes, calomel and corrosive sublimate (*raskapúr*), sulphuric acid and nitric acid; the uses of these will be noticed later on. For a flux he is constantly needing borax (*suhága*); and for his fire he needs charcoal, cowdung and wood. The wood used in Dera Ismail is *kikar* or *karíl*; in Hissár *kikar*; and in Rohtak broken cartwheels. For cleaning silver he needs *kishta*, an acid made from dried apricots, and *ámchúr* or mango parings. For brightening gold ornaments he wants sal ammoniac (*nausádar*) and blue vitriol (*nila thotha*). He uses *másh* seed for soldering; and the seed of the *abrus precatorius* as a powder to increase adhesion in delicate parts of ornaments. Yellow ochre (*zard mithi*) also is used for cleaning gold, and lac for setting stones; lac and pine resin (*selra*) are used in Kulu for material in which to insert an article that is to be embossed. Tamarind seeds are also used by goldsmiths, but I do not know for what purpose. Lead, too, besides being used for purifying silver, &c., is kept by goldsmiths to put between the gold or silver and the hammer, when the former are being hammered into the shape of a *thappa* or die.

16. The Assay of Gold and Silver.—A *Sanskrit slok* tells us that man is tested in four ways just as gold is; and the four tests of gold are said to be the touchstone, boring, heating and beating. In practice there are really only two tests, the boring, heating and beating being all parts of the same process. You can ascertain the purity of gold and silver by going through the processes described in the next paragraph but one; but they can also be assayed without breaking up or destroying the piece in one or other of the following ways.

The commonest method of assaying *gold* is by rubbing it on the touch stone (*kasauti*, *kaswatti*, *ghaswati*); then either the dealer will recognize by the shade of the mark made the quality of the gold, or he will compare it with the marks made by pieces of gold of known purity. The purer the gold, the

redder should be the tinge of the streak made, but it needs an experienced eye to tell the amount of alloy used: the gold alloyed will always give a paler and yellower colour than pure gold; but a copperish tinge in this paler streak betokens the presence of copper, and a white streak that of silver. No description, however, can do justice to the nicety with which the experienced *sunár* or *ráf* will hit off the exact amount of purity from observing the mark made on the touchstone. Leaf gold, if it is tested by the touchstone, has to be melted down first into a nugget with the ladle or *reza*. Touchstones are of various descriptions; one kind is found at Attock on the Indus. It is part of the necessary stock in trade of every goldsmith.

Another and in some ways a more satisfactory test is that made by boring a hole and heating the gold. The following is a description of this method as pursued in Hissár:—

"A small piece of gold is flattened slightly on the anvil. The *sunár* then takes any sharp-pointed instrument that comes to hand, and applying the point to the flattened surface of the piece of gold, gives the head of the instrument a gentle blow with a hammer. The point just enters below the surface and, by turning the instrument round, the *sunár* is enabled to make a small conical hollow. The piece of gold is now placed on a plate of talc and put in the *angithi* or stove on a bed formed of very small dried pieces of cow-dung. A circular cake of cow-dung is then broken into two and the pieces placed on each side of the plate of talc so as to partially cover it by meeting above it, and to leave in front an opening forming an angle of about 45 degrees. On the top of these two a third and small piece of cow-dung is placed, and thus a sort of miniature hut stands on the plate of talc. A little cow-dung or charcoal fire is then thrown on each side of the plate of talc, and, through the opening which was left, small pieces of *kikur* wood are put inside the hut in such a way as to just touch the talc with their ends, not to cover it or lie on each side of it. The *sunár* now takes a *chimta* or tongs in his right hand, and a *nál* or blow-pipe in the left. He applies one end of the *nál* to his lips, and by varying currents of air regulates the heat whilst with the *chimta* he trims the fire. Before long the gold and plate of talc are red hot, and then the *sunár*, seizing the talc with the *chimta*, withdraws it from the *angithi* to examine in a strong light the cavity he had formed in the gold. If the sides of the cavity are of a dark red colour, the gold is good; if of a whitish colour, the nugget is an alloy. The whole of this operation from the moment the gold is flattened on the anvil to the time when it is withdrawn from the fire takes only some 2½ minutes for performance."

A silver alloy is detected by the pale yellow colour left; a copper alloy will first turn red and then black. The brighter the red of the pure kinds of gold the higher will be the value. This method, being a little more delicate than, and not so speedy as, that by the touchstone is not so frequently employed.

A rougher test is by cutting into the gold and observing the colour and brilliancy of the cut made. Gold does not seem to be tested anywhere by its specific gravity; but the assay of gold and silver by aquafortis is said to have come into vogue during the last ten years in the Pákpattán Tahsíl in Montgomery.

Where possible, *silver* can be roughly tested by its ring, in the manner well known for testing coins. Or it may be rubbed on the ground and its purity noted in a mysterious way from the stain left. Or it may be cut for hardness; a copper alloy being harder, and a zinc alloy softer than the pure metal. Or it may be rubbed on the touchstone in the same way as gold. The common practice, however, is either to bore a hole and heat it for test in the same manner as that above described for gold, or to make a notch in the silver with a file and heat it in the *angithi* or charcoal stove. Under the latter process the notch in pure silver should remain white, and in silver alloyed with copper it will turn blackish, in silver alloyed with zinc it becomes yellowish, and in an alloy with both metals there will be a smutch across the walls of the notch. Sometimes the silver after being heated in a crucible is sprinkled with sal ammoniac (*naushádar*) and the alloy detected from the resulting color

17. Alloys.—Besides being alloyed for the purpose of dishonest gain to the goldsmith, the precious metals are legitimately alloyed of course for the purpose of increasing their hardness and power of resistance to wear and tear; and the solder employed in fastening together the parts of the lighter kind of ornaments is of necessity an alloy. I find no notice of alloy being used, as in the Ring and the Book, to enable *temporarily* the pure gold "to bear the file's tooth and the hammer's tap." The alloys used are not numerous. Gold is alloyed with silver or copper, or both; any other alloy only renders the metal brittle.

Slver is alloyed with copper and zinc; an alloy of silver with lead is of no use for making ornaments, and tin, they tell you, will not alloy with silver The alloy is made in all cases by melting the two metals in a crucible with the aid of borax. A silver alloy softens gold and pales it; gold will allow two *rati* a *tolá* of silver alloy; but its texture is not firm then. A copper alloy hardens the gold and colours it. There is not, however, generally any very distinct preference for either metal; in Peshawar silver is by far the commoner alloy; in Dera Ismail Khan the Daman goldsmiths are fonder of copper, and the Thal goldsmiths of silver, but no reason is alleged for these preferences. Silver is generally mixed with gold at the rate of ½ *másha* to 2 *máshás* a *tolá;* copper at the rate of one *rati* to one or 1½ *máshás*. To fuse an alloy of three *ratís* of silver with a *tolá* of gold, two *ratís* of borax would be used. Copper when mixed with silver makes it dark; zinc gives it a brownish tint. There seems to be no limit to the proportions of alloy possible; but the common mixture seems to be one or two *ratís* only to the *tolá*. Zinc and copper together are sometimes mixed with silver, but the result tends to be brittle, and if as much as four *ratís* is put to the *tolá*, the greater part of this four *ratís* must be copper. Yárkandi *kurs*, they say, will admit of an alloy of three *ratís* to the *tolá* of the baser metal. The ordinary alloy used for soldering small ornaments is that with zinc, brass not being used. The zinc in solder is stated in Hissár to be in the proportion of three *ratís* to the *tolá*. The ingredients for solder as given in Mr. Baden-Powell's book; differ from those reported to be used in the Jhang District, where for gold work the solder consists of one *tolá* of gold, six *ratís* of silver, and four *ratís* of copper; while for silver it is one *tolá* of silver and one *másha* of zinc. In Gurgáon the proportions for gold are one *másha* of gold to one *rati* of copper; and for silver, one *tolá* of silver to two or three *máshás* of zinc.

18. Purification of Gold and Silver from Alloy.—The common method of purifying *gold* is by making it into leaves, sprinkling the leaves with brick dust and salt, and heating in a slow fire. The process as carried out in Hissár is described as follows:—

"The mass of gold to be purified is melted down in a small crucible. This is accelerated by adding a little *sohága* or borax. On melting, the gold is poured into a *reza* in which it becomes a small thin bar about 9 inches in length and about 1½ inches in circumference. This bar is made longer by beating and is then cut up into small pieces weighing about 4 *máshás* each. These pieces are beaten into small squarish plates or *patras*, in size about 3½ × 4 inches and of the thinness of stout brown paper. The *sunár* then places an *opla* or dried cake of cow-dung on a heap of ashes in an *angithi*, which for such purposes is the lower half of a broken *gharra* or earthen pitcher. On the *opla* is spread a layer of powder composed of two parts of *surki* and one part of common salt. The *sunár* now seizes one of the plates of gold with his *chimta* or tongs and immerses it in water. When sufficiently wetted, the *patra* is taken out and the same *massála* or powder is sprinkled on it until a good coating adheres to the plate, which is then placed on the layer of powder spread on the *opla*. This process is repeated with all the plates, and they are placed on the top of the other. Over the bank of *patras* a miniature dome with small apertures at intervals is erected of small pieces of cow-dung. A *batti* or wick made of twisted cloth is soaked in oil and lighted. This is thrust into the dome through one of the apertures and thus the cow-dung is fired, and allowed to smoulder for three hours, by which time it is, as a rule, reduced to ashes. Three hours are allowed for cooling. All this time the heated powder has been acting on the *patrás* and absorbing impurities. If, after assaying, it is found that the gold has not been thoroughly purified, the same process is repeated except that no powder is sprinkled on the plates. The *angithi* is always put out of the way of draughts. If a draught was allowed to play on it, an amount of heat would be generated which would have the effect of melting the plates at the edges. Great care must also be taken in preparing the powder. If it is not properly prepared, it will either not act on the plates or it will act harmfully."

With a strong fine gold, which is alloyed merely with silver, will be purified in 4 to 6 hours: otherwise it is put in two or three times, and will take as long as 12 hours. It is customary in Pindi and Muzaffargarh to put it in three times and in Kohát three or four times. It is usual in Delhi to make the leaves 8 *máshás* in weight and about 6 inches square; and the mixture of brick dust and salt is there known as *saloni*. The leaves weigh 3 *máshás* in Jhang and 8 *máshás* in Amritsar in Pindi they are 3 inches by 4. In Muzaffargarh, Umbálla and Gurdáspur the *saloni* is mixed with water and smeared on to the leaves instead of being sprinkled over the moistened leaves as noted in the above quoted description. In Lahore

the powder applied consists of one part of common salt and one part of *opla* ashes; in Gurgáon of one part of salt and two of brick powder; in Amritsar of equal portion of alum, salt and *opla* ashes 3 *tolás* of the mixture being required for 20 *tolás* of gold. In Jhelum (where the process is called *aga*) it is oil burnt, clay and salt; in Pindi, Jhang, and Dera Ismail Khan it is water, salt and *bhitor* or earth from the *chúlha*: in Jullundur it is *opla* ashes salt and water; and in Kohát $\frac{2}{3}$ of *opla* ashes, and $\frac{1}{3}$ of salt mixed with water.

A process is used in Pesháwar which is very similar but more expeditious. The gold is plastered with a mixture of black salt and borax and put into a cake of burning cow-dung with other cakes heaped round about; the alloy is said to be removed in five minutes. In Jhang a mixture of one *rati* of bluestone to 4 *ratís* of sal ammoniac mixed with water, and *geru* is applied and the gold again put in the fire. In Hoshiárpur a process of purification by salt, alum and pip is mentioned. In Gurgáon the goldsmith knows when the gold *pannas* are pure by the sound they give when moved and also by the powder ceasing to stick to them.

The sort of process above described has this disadvantage that the metal forming the alloy is practically lost. According recourse is very commonly had to the following practice. The alloyed gold is mixed with silver either in equal quantities or 1 *tolá* of gold to 2 of silver. The mixture is either cut into small pieces and placed in water or is melted and thrown into water where it sinks to the bottom in separate small particles. These pieces or particles are then put into a porcelain bowl containing acid and the pure gold falls in black grains to the bottom. Water is added and the liquid is carefully poured away, leaving the pure gold which can then be melted into a nugget at pleasure. The acid used is a nitric or nitromuriatic acid. In Jullundur the ingredients are powdered nitre and *kahi mitti* (an earth containing iron as a sulphate); and in Kohát they are alum nitre (*qalmi shora*) and *kahi mitti*. In Dera Ismail Khan the ingredients of the acid there known as *faruki tezáb* are given as nitre and *kasis* or *kahi mitti*. This process is that employed by the *niáryás*: it is specially used in Dera Ismail Khan for extracting pure gold from old ornaments, and the gold thus extracted is known as *tezábi*. The silver in this process is recovered from the acid by putting in copper plates to which it adheres in powder; the powder is shaken off and collected in a cloth.

A third process is used in Amritsar and applied in Jhelum to gold obtained from sand known as Gohri gold by which the gold is fused with borax and purified by the application of calomel and corrosive sublimate (*ras-kapúr*.)

A method adopted to separate *silver* from zinc is to add lead equal to the estimated amount of zinc and melt the mixture down in a crucible; the zinc appears on the surface in a thin film; a pinch of saltpetre is sprinkled on this and it disappears; another film appears and the process is repeated till the silver is cleared. For an alloy with copper also it is usual to melt down with lead. The amount of lead will be 2 *máshás* to the *tolá*, $\frac{1}{8}$th *tolá* to the *tolá*, and other varieties up to equal proportions of the two materials, the proportion depending apparently on the amount of copper present. In Jhelum the rule is to add lead equal to twice the alloy; in Hissár it equals the alloy. In dealing with small quantities the *kotháli* or crucible can be used, the sides being sprinkled with *cowrie* ashes. But with any considerable quantity the more usual practice is to melt the metals in a *chari*. This is a hole made either by pressure of the hand or by pressing down a *kotháli* in a bed of ashes from a blacksmith's furnace spread over the ordinary ashes of a *súnár's angíthi*. Ashes from a blacksmith's shop are generally used because they contain metal and make a firmer cavity for the silver to be melted in; but in Jullundur we find wood ashes employed, and in Jhang wood ashes of the *jhand* tree. The sides of the depression are then strengthened by sprinkling with water; and charcoal or cow-dung and *kikar* wood are burnt over the depression and blown until the metals are liquified. The copper and lead escape as gases or are absorbed into the sides of the depression, or are partly helped out from time to time by stirring the mixture with an iron rod to which they adhere. Water is then dashed on to the silver till it cools. It is the silver thus produced that is known as *thobi*. Lead is almost universally used to purify silver, but if the information supplied from Rohtak is to be trusted, there is another method by which silver after

being melted with borax is purified by the addition merely of some *sajji* or impure carbonate of soda. If silver is alloyed with both copper and zinc, the process for extracting the zinc is first followed and then that for extracting the copper.

The method pursued in Lahore for extracting gold or silver from lace (*gota, kinári, &c.*), is described as follows:—

"Take a certain quantity of lace. Put it in a piece of cloth, burn it. Place the ashes in a crucible. Add a small quantity of borax. Subject it to heat. When melted, throw the whole melted mass into a tub of water. Take out the cooled mass. Put it into an *átashi* bottle enveloped in mud with a little space left uncovered in the middle. Add nitro-muriatic acid (*kahi shora ká tezáb*). Heat it. When chemical operation ceases, *i. e.*, when yellow fumes do not come out and are replaced by white ones, pour the liquid into a bottle. Into the bottle put a fresh quantity of the tezáb. Let it rest, and then pour some of the liquid into the bottle containing the metal. Heat the *átashi* bottle and proceed as before until only gold is left as residue in the *átashi* bottle. The residue gold is like sand; black when gold is in small quantity, red when gold is in large quantity, with respect to silver. The gold sand is put into a crucible and heated with a small quantity of borax; cooled; and a gold mass is formed.

"Copper pieces are added to the liquid containing silver in solution (to which a little water is added) in a porcelain vessel, and allowed to rest covered with an earthen vessel for three or four hours in hot weather or sunshine; and for two days or so if in the shade. At the same time care is to be taken that it is stirred from time to time so that a deposit may not be formed on the copper. The liquid contains no silver when it does not turn the skin black. The mass and the liquid are strained through a piece of cloth and the sandy mass put into a *kotháli* and heated with the addition of lead. When melted it is stirred a little and poured into a *kotháli* of ashes. It is again stirred with a stick of iron and cold water is dashed on it. When cooled there is pure silver left in the *kotháli*, impure lead, copper and ashes."

19. **Ornament making.**—The ordinary *sunár* of a village or country town will know enough to let him chase and emboss his ornaments and set them with stones himself; in large towns, these processes are the profession of separate classes of men. Town-people and the wealthy classes in the country provide these men with custom: a wealthy man in Umballa, for instance, who wishes to have really well-made ornaments will not go to the local market at all, but will import from Delhi, Jeypore, Patiála or Amritsar. The work of the embosser or chaser (*chatera*) has been noticed at page 185 of "*Punjab Manufactures.*" A common method of operating is to attach the metal to a firm paste of brick dust and resin in which it sticks so securely that it has to be removed by heat when the operation is over; the metal is then hammered flat and smooth with a small hammer, and a short pointed instrument called the *china* is hammered gently along the lines of the pattern. For this, great delicacy of touch, gained by long experience, is required. In Kulu a child *sunár* is required to practice this art daily on a wooden board till he becomes craftsman enough to be entrusted with the precious metals. The *china* is from time to time sharpened against a file as the process is going on. The *chatera* will sometimes be found sitting in a most uncomfortable position with his feet on the anvil and the ornament between his toes. And in some places he will be found to prefer holding the hammer in his left, and the chisel in his right hand. In Amritsar the art of embossing on silver, copper and brass is quite a speciality; the number of skilled workmen is, however, exceedingly small, and the municipality is trying to encourage the art by teaching boys at the Artizan School. The process there followed is to lay the metal on a bed of lac 1 to 2 inches in thickness; the design is either sketched on the metal or is drawn on paper, which is pasted on to the metal; the operator beats out the pattern with the help of various small instruments, and the figures whatever they are raised by the pressure of the lac; the plate is reversed and the same process continued till the desired height of the design is attained. The operation is described as tedious and expensive. The *setting of stones* is pursued as a separate calling in the larger towns; the setters are known as *jaria, murassákár* and *kundansáz*. Dera Ismail Khan has four such—two of whom have, however, come recently from Lahore. There are a few in Pind Dádan Khan. In Rohtak, where the stone-setters had once a widespread notoriety, the profession is now almost extinct. The ordinary method of setting is minutely described on page 186 of "*Punjab Manufactures.*" The dealing in precious stones is a subject outside the scope of our present purpose; but it may be noted that the cutting of stones, except the roughest description of work, is done in large centres like Lahore and Amritsar only; and

in Amritsar the trade in precious stones has diminished very seriously in the last 20 years, since the old customers who encouraged the trade, such as the rulers of Kashmír, Baháwalpur, Kapurthala and Patiála, have forsaken the market. The cutters of stones are known as *baigarís* or *begrís*. In large centres we also find a separate class of men called *matherás* who turn parts of ornaments into oval and round shapes after preliminary preparation by the *sunárs*. When a goldsmith wants to make beads or rounded pieces of metal for such ornaments as the *mála* or *katmála* he often employs these *matherás* to help him, sending the *matherás* flat pieces of metal which the latter presses with the end of his pincers (*sannú*) into round holes in a wooden board called *chakál*, and finishes off with a wooden instrument called a *moli*. The *mathera* will get 1 pice or ½ pice per bead as wages from the *sunár*, and he has no direct dealings with the purchaser. The beads are returned to the goldsmith to be joined on to the ornament. A further kind of embellishment is applied by another separate class, that of the *pardazsáz*. And the polishing will be done often by a class called *jilakárs* who do nothing else. The line between these various branches is however by no means sharply defined. The *murassákár*, for instance, will often embosss and chase ornaments as well as set stones. The village goldsmith is generally his own setter, embosser, chaser, polisher, &c., and sometimes his own wiredrawer or enamel worker. Some goldsmiths are often distinguished as *sádakárs*. The *sádakár* is properly a man employed on work which has not to be enamelled or set with stones ; and in Delhi the word seems to have a further signification implying that the *sádakár* is occupied only in the more elaborate kinds of such work, taking up the process where the ordinary *sunár* leaves it. The enameller, it should be observed, stands on a different position to that of the *chatera* or *mathera ;* these latter are employés of the goldsmith, the former is dealt with direct by the customer; an ornament which has to be enamelled is returned to the customer by the goldsmith in its unfinished state.

Regarding the processes employed in the simple ornament-work which constitutes so large a part of the gold and silver industry of the province, there is very little information on record. I have therefore less hesitation in appending some notes furnished as to the operation performed in making some of the commoner kinds of ornaments. The notes come from a district so remote from large centres as Jhang, and therefore may be taken to represent the very simplest methods adopted :—

Chauk (of gold, worn by Hindu women from 1 *tolá* to 4 *tolás* in weight). Melt the gold and make a *kandla* or an ingot slightly tapering at both ends, place it on the anvil and hammer it till it becomes a flat (*patra*), then make a circular mark of two inches in circumference with a compass (*Parkar*), and cut off the circlet with a scissor (*kat*), and place it on *khatta* or a concave in a block of wood and beat it with a *kuchar* (an iron like a hammer with round head) and it will assume the shape of a cup; this piece of metal should be three *tolás* in weight; gather the fragments of the *patra* and make a *kandla* of them again ; of this take nine *máshás* and make a wire, stamp it on the *phorwan* (an instrument for stamping out wires), and fit it at the round edge of the cup and solder it ; apply lac on the top part of a stone and place the cup on it flat and chase the concave side of it by the aid of a hammer (*sumba patrini kanerna*) ; fill it up with lac and produce ornamental work on the convex ; put it on fire and take out the lac and place a little tube of about half an inch in height on the top in the centre and set a stone on it and solder. It is finished in three days; rate of wages 12 annas to 1 rupee per *tolá*.

Walís (of gold, 25 in number, worn by Hindu and Muhammadan women in their ears, weight 6 to 8 *tolás*). Melt the gold and make a *kandla* of it ; of this make several pieces (each piece being 6 fingers long) just according to the number of holes in the ears. One end of these bits is elongated into a finer wire, 4 fingers long, and which is wound round a needle and turned into a ring (*kunda*). The other end of these bits is elongated one finger long like a needle and bent round a "*kátka killi*" (a wooden peg) to assume a circular form. This ornament is finished in two days; the rate of wages is 4 annas per *tolá*.

Nath (of gold, worn on the nose by Hindu and Muhammadan women, weight from 1 to 2 *tolás*). Melt the gold and make a *kandla* of it, one span long; of this take one *tolá* and make a wire of it 18 fists long and cut it into two bits, one of 12 fists long, the other of six fists. Out of the former take 11 fists and wind round a probe (?) and make a coil "*werh*," and let the other one fist remain straight and string pearls in it; now take the other bit of *kandla* and make a wire of it from 6 to 12 fists long and cut it into two bits, one of 8 fists long and the other of 4 fists in length, and wind the former round a probe ; take it off from the probe and pass the latter wire of 4 fists long through it and gather it up forming it into a "*chiri.*" Now take another *tolá* of gold, flatten it in the middle part tapering both ends, and fold up the middle part by the means of hammer and

sanni and join the breach of it by solder, fill in the hollow part of it with lac and bend it into a circle and make grooves by *sandran* and hammer, take out the lac by heating it over the fire, now fit the "*chiri*" already prepared into one of the tapering ends and tie the "*werh*" with the *chiri* by means of *kundás*. To make the jewel complete add some pearls of different hues. This ornament is prepared in 3 days, and the rate of wages is 7 annas per *tolá*.

Nám (gold necklace for Hindu males, one *tolá* in weight). Melt one *tolá* of gold, take 8 *máshás* of it, and make two plates (*patra*) and make a wire of the remaining 4 *máshás*. Turn this into a *chapni* or a flat and long plates make it like a *pipal* leaf and make grooves all over it. Place this on one of the above two plates and solder (this ornament has curves all round the edge); fill it up with lac and turning it up side down, ornament it with *patrini*, *kanerna*, *sumba*, and *talidana*. When this is done, take out the lac and fix the other plate, and solder. Put up two or three rings *kunda* at the above and one ring below to which a pendant (*bulák*) is suspended. It it finished in 2 days; rates of wages 12 annas per *tolá*.

Kara or *kangan* (gold generally worn by Hindu men on their wrists, weight 5 *tolás*). Melt the gold and make a *kandla* of it 9 fingers long and 1½ finger broad and cut it into two equal bits; bend each round by the aid of anvil and hammer and solder its joint, fill it in with lac and bend it round like a hoop from the both ends like tigers' heads and produce ornamental work or flowers by the instruments *sumba*, *patrini*, *athalna* and *kanerna*. Take out the lac by heating the ornaments on fire; some of those are round, some four sided (*gokhru*) and some six sided. It is finished in 3 days; rate of wages 8 annas per *tolá*).

Arsi (of gold worn by Hindu and Muhammadan women on their thumbs, from 2 to 4 *tolás* in weight). Melt the gold and make a *kandla* of it; take one *tolá* of this and make a *karra* of it 5 fingers long (a hoop-like thing with points on the edge all round) and make wire of 6 *máshás*; stamp and cut it into 4 bits according to sizes, place them round in four rows attached to the *karra*, take 8 *máshás* more of gold and turn it into a round plate in the shape of a cup, fill this up with lac and produce ornamental work on the surface of it by *sumba*, *patrini* and *kanerna*. Take out the lac by heating the ornament on the fire, and taking 10 *máshás* more of gold, make a ring and stamp it on a die intended for the purpose and attach it in the centre on the convex of the metal; set a round bit of glass on the mouth of it. This ornament can be finished in two days; rate of wages 8 annas per *tolá*.

Choti phul (of silver worn on the head by Hindu females of Arora caste, mostly 60 *tolás* in weight). It is made as follows:—Melt the silver and make four *kandlas* of it Rs. 15 each in value, take one *kandla* and make a round plate, concave one side and convex the other just like a shield; take another *kandla* and turn it into a plate 7 fists long, a little less than one finger broad. Place it on a die called "*karrelra thappa*" and hammer it on; it will have a regular row of pinnacles or tiny pyramids (sink); affix this all round the upper edge of the convex side of the metal by solder. Take one *kandla* more and make a plate of it 10 fists long four-sided, cut it into 170 equal bits and turn each like a 2 anna bit but a little smaller in size, place each of them on a die (*ghugge-ká-thappa*), put a *sumba* on it and beat it with a hammer and each grain will come out like a cone (*ghuggi*). Now take another *kandla* and make a wire of it 70 fists long, cut it into two equal bits, stamp one of these on *phorwan* and draw the other through the holes of the steel plate *jandri* till it becomes 70 fists long, then stamp this also, beat it lightly with a hammer, cut it into 100 equal bits and form a double ringlet (*ghuri*) of each of them. Place a wire all round at the bottom of the pinnacles and then some of the ringlets all round which will give the shape of a creeper. Place another bit of wire all round again, and then set a row of the cones; make such circles three times more, leaving a round space just like an eight anna bit in the centre of the jewel to hold a flower of about an inch high, hollow and round just like a blow-pipe, with a row of 12 leaves on the upper edge of it, being adorned with a thick stamped wire (*bari kangni*), and a thin stamped wire (*chhoti kangni*). When all this process is finished, solder the whole superstructure or ornamental work. A ring attached in the centre of the concave side of the metal completes it entirely. It is made in eight days; rate of wages 1½ annas per *tolá*.

Hassi (of silver 25 *tolás* in weight, worn by both Hindu and Muhammadans, males and females). Melt the silver and make a *kandla* about 10 fingers long (four sided), keep a place in the middle about two fingers in length (*mar*) and make both sides of it longer by the aid of anvil and hammer, tapering at both ends; when it is 19 fingers long, produce ornamental work by *patrini* and *athalna* and *sumba*, place it on the hollow part of a block of wood, and place a bit of tin (*kali*) over it and beat it with a hammer till it assumes the form of a ring and the thin ends meet when it is bent into shape. It is made in two days; the rate of wages is 9 pies per *tolá*.

Bahwatte (of silver, an armlet for Hindu and Musalmán females, 20 *tolás* in weight). Of the 20 *tolás* take 10 *tolás* first and make two plates (*patra*) of 8 fingers long and one-and-quarter finger broad and as thick as pasteboard; cut each of them into 11 bits, the first bit or *chapri* somewhat square □ and the other somewhat like the letter X; take the other bit of 10 *tolás* and make a wire of it 25 fists long, cut three fists of it for stars (*akhris*) 22 large and 92 small ones, make 92 rings (*kunda*) of the rest of the wire, *viz.*, two for each square and 6 for each of the other shape; affix the large star (*akhri*) in the centre of each and one small one at either point or edge of the square metal and three rings at either

edge of that of the other shape. These small *akhrís* are placed at the base of each *kandla* on the (*sidha pása*) right side. This ornament for both arms is finished in 3 days, and the rate of wages is 1 anna 3 pies per *tolá*.

Churá (of silver or bracelets worn by the females of both Hindu and Mussalmáns. Seven bracelets in each hand from 20 to 60 *tolás* in weight). To make one *chouras churi* or bracelet, take 3 *tolás* of silver and turn it into a flat plate just like a flat ribbon of two *chappás* in length and stamp it on a die (*thappa churi*), and bend it round a *kátka killi*. One man makes 14 bracelets in two days ; rate of wages 9 pies per *tolá*.

Nure (of silver, anklets for Hindu females 20 *tolás*). A pair of round tubes (*nure*) are made thus : of 20 *tolás* of silver take 17 *tolás* and make a *kandla* of it 6 *chappas* long and cut it into two equal bits ; make each of these four *chappás* long and three fists broad each, and turn their borders by a (*kat*) scissor, and bend them round on a thin round rule (*kát-ki-gazi*) ; take them off from the ruler and solder their points; fill them up with melted tin ; when cold bend them round like a ring by the aid of the *sandran* and *mohli* ; measure by a compass four equal spaces in length on each of these ornaments and produce ornamental work in such a manner that they may be distinguished from each other ; of the four spaces marked on each ornament, cut one of the four spaces at one end of each of the circlets, apply to them mud all over and put them in the fire ; when hot, take out the tin and fit them up with rings (*kunda*) bolt and hinges to close and open. A pair is finished in three days ; rate of wages is 1 anna 6 pies per *tolá*.

The cleaning and polishing of ornaments is done in various ways. *Gold* will be cleaned with a mixture of alum, salt and blue vitriol soaked in water, followed by a heating in the fire ; or (if impure gold), by rubbing with a powder composed of 1 part sal ammoniac, 6 parts salt and 12 parts alum. In Gurgáon the ingredients of this mixture are given as 2 parts alum, 1 salt, $\frac{1}{24}$ sal ammoniac and $\frac{1}{24}$ blue vitriol, with *pili mitthi* added ; there, too, the gold is again covered with *geru* and a little blue vitriol, and put again into the fire till it smokes, after which it is cleaned with a brush. Brick-dust *(surkhi)* and salt is also used for the purpose. Or you can rub on with water a powder of which two-thirds is alum and one-third salt, dipping the gold in a cold solution of *kishta*, and washing with water. If the gold is to be given a reddish colour, *geru* can be rubbed on and the gold heated. *Silver* can be cleaned by being boiled in a pot containing 3 sérs of water to $\frac{1}{4}$ sér of *ámchur* or mango parings ; the pot is taken off the fire after two hours, and when it is cool the ornaments are extracted and the bits of *ámchur* adhering to them are brushed off. Massive ornaments can be polished by a string of glass beads dipped at intervals in water ; finer work is beautifully polished with an instrument called *jilauri*. Silver is also cleaned by being soaked two or three hours in an acid solution of *kishta* and then smeared with a paste of saltpetre and borax or alum and salt, and heated and cleaned with a brush. Silver can also be polished with a rubber of agate or cornelian called *mohari*.

Mr. Baden-Powell, on page 185 of his "*Punjab Products*," notices that the sweeping of the floor of a goldsmith's shop are valuable enough to be sold, when the goldsmith leaves his shop, to a class of persons called *Niaryás* who extract the gold from them. It is common for the *Niarya*, as in Hissár, to come round every month or second month and pay a few annas for the sweeping. Or he will, as in Dera Ismail Khan, pay Rs. 50 or 60 a year to a goldsmith for the monoply of the sweepings. These he takes away in a wooden tray or *kátra* to the side of a tank, where he mixes some of the rubbish with water in a large earthen vessel called a *kund*. He stirs this well to let the metal sink and then puts the vessel into the tank just below the level of the water and sways it to and fro till the dirt has gradually been washed out and the gold alone remains. His method of purifying gold has been noticed above. His profit is put down at 2 to 3 annas a day ; but it is very precarious. Where the street in front of a goldsmith's shop is unpaved, the *Niarya* will make something out of the scraping there too.

20. Gold and Silver wire-making and cognate industries.—After the ordinary simple ornament work of the goldsmith is to be noticed the class of work which produces gold and silver wire, thread, ribbon, spangle, lace, foil, tinsel and the like. Mr. Baden-Powell gives a full account of this kind of work at pages 156 to 164 of his book. The origin of the whole matter lies in the cigar-shaped silver ingot *(raini)* covered with gold leaf *(sona patra)* known as the "*kandla*." With the help of the simple and powerful apparatus described by Mr. Powell, this is drawn out into wire by the *tárkash ;* and then, with a lighter apparatus into a

still finer wire by the *kataya*. The wire will then go to the *dabkaya*, who beats it out into the flattened state in which it is known as *tila;* or twists it into wavy tinsel known as *mukesh* and *sulma;* or hammers it off into spangles *(sitára)*. The plain flattened wire is then handed on to the *kalábátúnsáz*, who twists it on to silk thread and thus makes the gold and silver thread or *kalábátún* used in embroidery; or to the *kinárib*á*f*, who weaves it with thread into the ribbon known generically as *gota*. The *mukesh*, *sulma* and *sitára* go to the embroiderer or shoe ornamenter, who works them into the appropriate material as required. *Lace* will be made by the *kinárib*á*f* from the coarser wire *(tand)* as it comes from the *tárkash*.

Such, in brief, is Mr. Powell's account; but there seems little doubt that the *tárkash* has been here confused with the *kandlakash*. In Delhi and Lahore at any rate it is the *kandlakash* who first draws out the wire, and the *tárkash* is the same as the *kataya* or *ghataya* who afterwards draws it out finer. For information of all kinds regarding the gold and silver wire manufactures of Delhi, the *locus classicus* is Mr. Stogdon's note which is printed as an Appendix to the Punjab Internal Trade Report for 1881-82. As there noted the silver ingot (*raini*) is in Delhi called "*gulli*"; the ingot of 75 *tolás* will have an alloy of 2 *tolás* of copper and the gold leaf applied will vary from 6 *máshás* to 5 *tolás* according to the richness of wire required. Mr. Stogdon states the maximum length of wire turned out by the *kandlakash* as 10 yards to the *tolá*; the information now supplied says 12 yards can be turned out. The finest wire that the *tárkash* makes is said by Mr. Stogdon to run about 900 yards (yards of 2¼ feet) to the *tolá;* it is now stated that skilful men will turn out as much as 1,200 or 1,300 yards (but the length of yard is not stated).

Neither Mr. Powell nor Mr. Stogdon notice the practice of affixing the gold leaf to the ingot by first notching the ingot with a file, nor to that of cleaning the gold leaf attached with salt and alum and water. In Mooltan the *kandlakash* now work with an English machine which requires only 3 persons—two to look after the machine and one to mend the wire when it breaks. The Delhi octroi rates are given by Mr. Stogdon. The purity of the Lahore *kandla* has degenerated since the days when Mr. Baden-Powell noticed its special freedom from alloy. The Municipal control has been withdrawn; the *kandla* is no longer taxed; and it is no longer pure; the *tárkashes* complain of the lowness of their profits and the constant liability of the wire to break; the customers who buy the wire and the *tezabiás* who extract the gold and silver from it are equally dissatisfied; and it is stated that a strong feeling exists in favor of the taxation, or at any rate, the official assay, of the *kandla* being renewed. There is a story that Government inspection was stopped by the circumstance that an inspecting Dárogha learnt the *kandla*-drawing which he was set to watch, and practiced it to the detriment of the trade; the guild sued him and carried the case up to the highest Court, by which it was finally decided that the assay of *kandlas*, which hitherto had been carried on as a relic of native ruler's practice, was outside the scope of the function of Government. I have not been able to trace any foundation of fact for this story, but it is very probably correct in its main features. Popular report also says that assay under native rule was very strict; a piece of the *kandla* weighing one *tolá* was put into a crucible, while into another crucible a *tolá* of lead was placed; the two were subjected to the same heat until the *tolá* of lead disappeared; the silver was then taken out and if the weight had been reduced by more than four *ratís*, the *kandla* was passed as correct.

The plain flattened wire of Delhi is called *bádla*, and *diwáli* is the name applied to the broader kind of this wire as *mukesh* is to the thicker. The tinsel called *sulma* is in Delhi said to be of four kinds—*sáda*, prepared from *bádla; kora* prepared from ordinary *tár; tikora*, a polished *(jiladár)* description of *sáda;* and *gijai*, made from wire which is flattened on one side only.

The *kalábátúnsáz* or gold and silver thread-maker is known in Delhi as a *bataya; kalábátun* is made in Mooltan also and to a small extent in Jullundur; in Mooltan the weight of silk and silver used is almost always equal. Of gold thread made outside the Province, the Bokháran is by some authorities thought to be the best; then the Agra thread, and lastly the Russian. In Lahore, Kasúr, Chiníot and other towns where there are large colonies of Khojás, a good deal of

embroidery of gold thread on leather is done by Khoja women; and similar work is done by the *mochís* of the hill tracts of Hoshiárpur and Kángra. Where the borders or edges only of the silver are embroidered, the work is known as "*beldár*"; where the heel and toe are embroidered, it is "*butáwála*"; and where the whole surface is operated on, "*gach.*" The richer classes in Dera Ismail Khan will order embroidered shoes from Pesháwar costing 2 to 10 rupees a pair.

The various kinds of ribbon wares form a separate class from the above. *Gota* is the generic name for these, but it is properly applied only to a kind of ribbon which is less than ½ inch or an "*ungal*" broad. There is a narrow plaited gold cord called *dori*, which is used in Hissár for edging men's *angurkhás* and women's *mirzais*, and is there gradually supplanting the *kaitún* or plain unflowered ribbon which used to be applied to the same purposes. The ribbon or *gota* of Delhi is very often woven by ladies in distressed circumstances (said to be about a thousand in number) who keep their occupation as secret as possible. Gilt ribbon or *gota tilai* is called *dhanak* when narrow; *kinári* when broad; and *thappa* when of medium width and stamped. Silver or *nuqrai gota* is either plain or impressed *(thappa)*; the former is immensely sought after. The *kinári* of Delhi is 5 or 6 *ungals* wide. *Palla* is a broad kind of *thappa, lochka* is *gota* two *ungals* wide, and *anchla* (generally used for putting on *dopattas*) is *gota* which is more than two *ungals* wide; *khingri* is a wavy form of *gota* and in *gokhru* (or *bánk*) the design is castellated. *Kinári* and *gota* are often edged with cotton and silk thread *(asára* or *pam)* or with *kalábátún* (gold or silver thread). The narrower forms of Delhi lace are used for trimming men's *angurkhás* or coats; the broader forms are employed on skull caps, which cost 8 to 12 rupees a piece. In Dera Ismail Khan the Pesháwar skull caps have a far larger sale than the Delhi ones. It may be noted that it is often customary for the *kangri farosh* or seller of ribbon to make advances of money to the *kandlakash* for the carrying out of orders for wire. The *patáli* is a man who works gold and silver thread into silk *azárbands* (drawers-strings), *chaprásis'* badges, lace for uniform and the like; he is said to make Re. 1-8-0 a day by his trade. The *zardoz* or *karchob* works gold or silver wire on cloth, and the *ilákaband* works them into girdles. There is some small local manufacture of lace and thread in the Jullundur District and some ribbon lace and thread at Hoshiárpur, Garhshankar and Dasúya in the Hoshiárpur District, and some *dori* or *kaitún* ribbon is made at Siálkot and Pasrúr; but such work is generally confined to large centres.

Under this head we should notice the Pesháwar *lungís*, which are handsome and have a wide reputation: they are embroidered with gold at the ends and often all along the edge, and cost Rs. 10 to Rs. 100 each. There used to be a fair industry at Rohtak for weaving gold and silver in turban and scarves, which gave employment to some hundred men; the Rohtak work of this kind was said to be the best in India, and there was a great demand for the ware at Delhi and Jaipur, but the fashion has now changed and the industry disappeared.

21. **Inlay, Electroplating and Enamel.**—A very minute account of the *inlay* of gold on steel known as *koftgari* work is given at page 167 to 171 of "*Punjab Manufactures.*" Very little is now done at Amritsar and the industry at Mooltan has ceased altogether. There is a rough sort of inlay practiced on firearms at Kohát; the surface being punctured and the gold or silver wire then beaten into the design. The centres of the art at present at Kotli Lohárán near Siálkot and at Gujrát. The workmanship even there is declining and the prices rising; the result of indiscreet European patronage. There are 8 shops and 13 workmen in Gujrat City, and the trade is said there to be improving steadily; two years ago certainly there was room for improvement. The material of a small shield of fine gold inlay (*dhál sonehri*) with a diameter of 14 inches costs Rs. 28; the work takes 30 days and the price at sale is Rs. 40. That of a shield of mixed gold and silver inlay (*dhál gangá-jamni*) 15 inches in diameter costs Rs. 8-12-0, takes 20 days and sells at Rs. 14. Other articles such as boxes, sword-handles, breast-plates, *kalamdáns*, plates, bowls, inkpots, picture frames and the like, are also made and are well known to Europeans.

Electroplating (mulamma) after the native method is described at page 172 of "*Punjab Manufactures.*" Plating is practised at Delhi, and to a certain.

extent in Hoshiárpur; the work in Amritsar is limited and not of a high order. There is a very little done in the town of Kángra, chiefly silver buttons with chains, silver cups, *gulábpáshís*, rings and necklaces. In Siálkot some electroplating after the European method is done in the town and in cantonments and in Kotli Lohárán; the method pursued is that described by Mr. Baden-Powell. In Gujránwála there is an electroplater, who makes a fair livelihood by electroplating copper bracelets, necklets and rings. In Dera Ismail Khan the *sunárs* will electroplate in the ordinary method; they are said to plate silver earrings with gold very neatly. The art is not practised at Mooltan. This is the only branch of gold and silver industry in which there appears to be anything like a trade journal; a sort of hand-book, describing in great detail the processes of electroplating, was published recently at Delhi in two or three separate numbers under the name of "*Gilat ka Risála.*"

The process of *enamelling* (*minákári*) is also described in "*Punjab Manufactures*" at page 191. Enamelling on gold and silver in pink, white, yellow, green, blue and red, is done at Delhi; a little is done in Hoshiárpur, in Amritsar it is scarcely known. In Dera Ismail Khan there are four enamellers, two of whom have recently come from Mooltan. Mr. Baden-Powell derives the word *minákárí*, apparently with justice, from the Persian word "*mina*," blue; but the local derivation at Mooltan is from "*nima*" (half), because the alloy used on the work is said to be half silver and half copper. As a fact the mixture in Mooltan is generally $\frac{3}{4}$ silver to $\frac{1}{4}$ copper; and the alloy is said to be more now than it used to be. Kángra and Mooltan seem to be the only places where the art is practiced to any appreciable extent; the work at Maghiána and in Hazára being scarcely worth mentioning. Even in Kángra it is not the exclusive work of the men who work at it, for the same man will turn his hand to embossing, setting and enamelling. The enamel there is applied largely to silver cups and card cases. In Mooltan the art is applied to thumbrings, fingerrings, toerings *atardáns*, *surmadáns*, and square lockets *(patrián)*; also to necklaces, buttons brooches, bracelets, &c., of English style; and to dishes of various kinds.

22. Gold and Silver Leaf.—Anyone who wants to know the process employed in *gold beating* (*daftrikut* or *zarkobi*) will find all the details and the names of the drugs used minutely given on page 173 of Mr. Baden-Powell's book. In Delhi the occupation is carried on in 51 establishments, supporting 117 men, all Mussalmáns. It is known too at Hoshiárpur and in Pind Dádan Khan; a good deal is done in this line at Amritsar, and at Mooltan there are 5 establishments employing 20 men. In Lahore there was a very superior gold-beater who is now blind; but he is said to have bestowed his craft along with his daughter on his son-in-law. Leaf for gilding in Delhi is made in pieces of 9 inches by $4\frac{1}{2}$, 75 or 100 to a *tolá*; and you can get, they say, more silver leaf in a *tolá* than gold. In Kángra no gold leaf is made, but silver leaf, aggregating in yearly outturn something under Rs. 2,000 in value, is made up at Kángra, Núrpur, Sujánpur, Nádaun, Baijnáth, Nagrota, Bhawárna and Paprola. The gold leaves of Mooltan are 3 to a *rati*, selling at 13 to a rupee, silver leaves 50 to a *másha* and 210 to the rupee. The *daftri* or book of leaves is, as made in Lahore, of 120 leaves; but the *daftri* as sold is said to be of 100 leaves only, the difference going to the middleman shop-keeper, and the gold-beater himself making a profit of one anna in the rupee. The silver *daftri* sells at 12 annas and the gold at Rs. 4. Leaf is used for stone setting, overlaying, illuminating, and binding.

For *illuminating* you grind the leaf in a mortar with a boiling mixture of water, glue (*saresh*) and sulphuric acid (*farukhi tezáb*); and paint on with a brush of squirrel's hairs. For drawing the lines round the leaves of a book the charge is an anna a page; and foolscap size *murásilás* are illuminated for 6 to 8 annas each. For *binding* you rub the leather with white of egg and apply a paste containing in the proportion of 3 to 4 white wax and castor oil; then you affix the leaf and press it down with a stamp bearing the required letter or design. *Printing on cloth* can be done either with a stamp or by hand. In the former case you make a paste of equal parts of glue and chalk to which white of egg has been added. After boiling them in water you stretch the cloth before you and smear this paste on to the stamp and press the latter on the

cloth; you then pick up the gold or silver leaf with cotton wool and apply it to the place. In the latter case the design is marked out with a bamboo reed or pen dipped in a mixture of white *dhúp, ganda-beroza* (turpentine) and *mitha tel* (sesame oil). The hand work (known as *nik-ka-kám*) is said to be done by women alone and as part of their household duties, not as a profession.

Gold and silver leaf is also used as a *medicine*, being eaten with raisins (*munakka*) or pickles of apples, *halala* (Terminalia chebala, "*Punjab Products*," page 349), and *ámla* (Emblica officinalis) as a kind of tonic. Preparations are also made called "*kushtas*," the ingredients of which remain a mystery to all but their makers; the pure gold *kushta* is called *mirgang*, that of silver *rúpras*, and that of gold, silver, pearls, copper, slag (*sang-basri*) and other drugs, *basant-mitti*. The gold or silver *kushta* is used for palpitations, debility, congestion of the lungs and what not. Sometimes silver is prepared with the aid of sal ammoniac and *ak*-wood fire, or with turmeric and *opla* fire, about. ¼ *rati* of the ashes being eaten with cream or butter. These *kushtas* are sought after, and charged for at fancy prices such as Rs. 200 a *tolá* and the like. There seems to be a good deal of rascality and quackery connected with the preparation and sale of these medicines. Alchemy, too, of course, is far from being dead; and the credulity of the people in such matters is unlimited. There is a characteristic tale from a recent issue of the *Civil and Military Gazette*, which is only one of many that illustrate this:—

A native mendicant having recently arrived at Mean Meer gave himself out as an alchemist and, as usual, succeeded in gaining the confidence of a large number of ignorant natives there, who were anxious to learn the art of making gold. The other day, however, the alchemist asked them to bring him all the silver jewellery which they had in their houses, promising that he would turn them into gold. The request was promptly complied with, and before evening a heap of jewellery of the aggregate value of about Rs. 3,000 was brought and given to him. As the process was to take place in secret, the men were prevented from visiting the house of the alchemist during the night, but the following morning the alchemist was missing, having absconded with the jewellery. The men are on the look out for him. Some having gone to Jullundur expecting to find the mendicant there.

Gold is also used as with us for the metal plates of false teeth, also as wire for fastening loose teeth; there are four men in Delhi who are specially proficient at this. And besides these, there are the pieces of gold with which Hindús transfix their teeth for superstitious reasons, regarding which more hereafter.

23. Miscellaneous Gold and Silver Work.—Vessels of the precious metals such as *atardán, golábpásh, pándán, surábi, gilás, surmadán*, cups, plates, dishes, &c., are made by the Delhi *sádakárs*. In Gurgáon, but more rarely and only to order, the goldsmiths make *atardáns*, salvers (*tashtaris*), *huqqa* mouth-pieces and even *huqqas*. At Umballa, Rupar and Jagádhri, *atardáns* and the like can be made, but not well. In Jullundur goblets, *huqqas*, trays, &c., are made; and in Hushiárpur *surábis* and silver *atardáns*, but only to order. In Montgomery they make buttons and *huqqa* mouth-pieces and the like; and in Pesháwar silver cups for Hindús, *surmadáns, katoris*, small plates, and silver bodkins for stringing *pajamás*. In Pesháwar you also find silver mounting for sword and knife scabbards, and silver buckles and other mountings for harness are occasionally made for wealthy Afghán Sardárs. They also make locally the articles used in marriage presents; such as the silver shoe used by Kaláls (price about Rs. 10), and the *surmadáni* and *tháli* and *katori* of most Mussulmáns; the *katori* of silver is a pomatum box for the bride's dressing table, and costs Rs. 3 to 6. Caskets are well done in Dera Ismail Khan, the charge being 2 to 4 annas a *tolá* for silver, and 8 annas to 1 rupee a *tolá* for gold; they also make *surábis* and *huqqa* mouth-pieces to order. There was a man in Gujrát who could make vessels of gold and silver, but he has grown blind without imparting the art to any one. In Kángra the only articles procurable are silver drinking vessels (*ábkhorás*), enamelled silver cups, silver rose-water sprinkles, paper-knives, enamelled card cases, antimony holders, and silver *huqqa* mouth-pieces (*muhnál*). You also find curious little industries at all sorts of places; at Pesháwar, for instance, there is an industry in tooth-picks and *kán khaláls* of silver, which are worn round the neck chiefly by those who are addicted to long prayers; and at Delhi they make the light circular pieces, equal

to one-eighth or one-fourth of a rupee each, which are thrown over the *pálki* of a bride and scrambled for by beggars. All this miscellaneous kind of work is said to be generally rude and wanting in finish; but in Kángra at least these defects are absent or at any rate unobtrusive.

Articles of *jalús*, spears, *haudas*, saddles, *ásás*, *máhi marátibs*, fans, &c., are made by the Delhi *sádakárs* for Native States, but not the quantity formerly made. The artizans of Lahore and Mooltan have a special aptitude for gilding large surfaces such as the domes of mosques and the spires of Hindu shrines. The copper gilt of the *Durbár Sáhib* at Amritsar is said to be all done locally. The *arghi* for pouring water over the idol in a *shivála*, the *tashtri* or tray for collecting the water, and the *charnamriti* or ladle for distributing it, will sometimes be of silver or gold; there will also be three or four cups for keeping rice, &c., in; the lamp for *rati*, and the handle of the sacred flapper. In some Hindu temples and Sikh *samádhs* are kept silver-plated stools, lamps, *lotás*, *gharrás* and drinking vessels. There will also often be gold umbrellas and frontlets (*mukats*) for the idol; also earrings, bracelets, &c., for adorning Radha and Krishn. The statue itself may be of silver or gold; many such are prepared in Amritsar. In many *shiválás* the platform for the idol is of silver; and other articles, such as the *tipai*, *matka*, &c., used in worship are of solid silver. The account of this class of work in Kulu is interesting :—

The *deotás* or idols are profusely ornamented, besides being constructed mainly of the precious metals. A *deota* is a collection of a number of fairly carved faces affixed in rows one above the other to a large convex copper plate, which is unseen, being generally concealed by flowers strewn over it, and which is placed in a sleeping position in a high-backed chair without legs, attached to two long palanquin poles, and draped with silks and cloths. Attached to the top of the copper plate and standing well above the top of the chair is an umbrella-shaped ornament of gold or silver known as the *deota rá chhátar*. In the case of the *deotás* of *Seoráj* a dense canopy of black *yák* tail hair is interposed between the top of the copper plate and the *chhatar*. The *deota's* faces known as "*mohr*," are sometimes of brass, generally of silver and occasionally of gold. They are life-size representations of the human face. There may be 6, 9, 12 or 16 faces arranged in rows of two, three or four. They all present the same placid expression, and, though fairly carved, are not works of high art. The *chhatar*, however, is a very pretty ornament, shaped, as its name implies, like a flattish umbrella with pendants of chains and balls hanging all round the edge. The top surface is elaborately embossed with patterns of flowers, &c., and a smooth, conical apex is attached to the centre of it. The *chattar* is generally renovated or a new one is supplied to the *deota* before he goes to the annual *Dasehra* fair at Sultánpur. The largest and finest of the Kulu *deotás* is *Bijli Mahádev*, a very handsome piece of workmanship. A female idol or *devi* is generally adorned with ornaments such as are worn by women, but made on a very large scale. A gold *chhatar* costs about Rs. 600; what the value of the materials embodied in a *deota* (idol) may be it is difficult to say, but even a brass *mohr* or *deota* face realizes Rs. 50, so that the total value represented by the 365 *deotás* of Kulu must be very great. The following musical instruments used in the worship of a *deota* are sometimes of silver though more often of baser metal :—The Karnál, a very long straight trumpet; the Narsingha, a large curved trumpet. They are not, as a rule, chased or ornamental.

24. The Ornaments of the Punjab.—It is of course very difficult to give any estimate approaching precision as to the proportion of the value and amount of gold ornaments to those of silver. Gold is confined mainly to the richer classes, and is not largely worn even by them except on festive or other special occasions; whereas silver is the material of which almost all the ornaments of the lower or agricultural classes are made, and a large proportion of these ornaments are in daily and constant use. In Umballa it is estimated that three-fourths of the ornaments worn by the rich are gold and three-fourths of those worn by the poor are silver, but whether this is an estimate of value or amount is not quite clear. Probably the value of the gold ornaments of a district will ordinarily exceed that of the silver; in other words, the amount by weight of the silver will not exceed 20 to 25 times that of the gold. In Gurgáon, it is true, the value of the gold is said to be only one-tenth that of the silver, but in Siálkot the value is put at 2 to 1, in Jhelum at 7 to 3, and in Pindi and even Kohát the gold used is estimated at more than the silver, and probably this is really the case everywhere. In Ludhiána the proportion (it must be proportion in amount, not value) is given at 1 to 20, in Montgomery as 1 to 2, in Gurdáspur and Pindi at 1 to 4, and in Dera Ismail Khan as 1 to 100. All such estimates are, however, at the best but mere guesses, and I merely record them that they may be taken for what they are worth.

Mr. Baden-Powell on pages 181—4 of his "*Punjab Manufactures*" gives a list of 99 names for ornaments used in the Punjab, and the list is by no means exhaustive. For ordinary purposes, however, it generally suffices to be acquainted with a few of the main types only. For instance, there is the *phul* or hemispherical knob worn by women on the top of their heads, and the *chaunk* or small edition of the same. There is the *dámni* or fringe that hangs over their foreheads; the earrings (*bála* or *báli*), the *nath* or nosering and the *laung* or nosestud; the *hár* or *málá* and the solid *hassi* or *hass* round the neck; the *bázúband* on the arm, the stiff bracelet (*kangan, kara* or *gokhru*), and the thin bangle (*chúri*); the fingerring (*angushtri*), which, if plain, will be called a *challa*, and if set with stones a *mundri*; the thumbring with its looking glass (*ársí*), the big toering (*angutha* or *angushtána*), the *chánjar* or hollow rattling anklet, and the *pázeb* or fringed anklet. These, though even they are not current everywhere, are the more general terms and express the main types. But there are innumerable varieties, and varieties of varieties, which are familiar to every native, and the terms in one district or part of a district are often only locally understood. Once you have grasped the difference between a *hár* and any other kind of necklace, you have still to find out the distinctions between the *chandansaini hár*, the *sitáron-ká hár*, the *pálkon-ká hár*, the *kanghni-ká hár*, and a hundred other *hárs*. You may appreciate what a *nath* is, but you have still to differentiate the *bawáliwálí nath*, the *poli-sádi nath*, the *niggar nath* and other *naths* innumerable. Then, again, what you knew as a *hass* or *hasli* in the Punjab is, of course, a *háns* or *hánsli* at Delhi. And, further, the *chaunk* of the Punjab is called a *sisphul* in Delhi, a *chandbina*, a *chandra*, a *bindlí*, *Bindi*, a *barwata*, *palkin*, a *silwata*, a *seli batta*, and so on. You find ornaments mentioned in Mr. Powell's provincial list, such as the *tawít*, *kuntala*, *tandaura dedi*, *mor phunwar*, *rekhan*, *bani*, &c., which are not known at Delhi. Further, if Mr. Powell's list is to be trusted, a *jhamkangan* is a small hollow bracelet with grains inside; whereas if you go to Shahpur, you find the *chankangan* to be a bracelet with pendants, worn above a set of *churís*. And a *bálu* in Shahpur seems to mean an armlet; while in Kángra it is always nosering. Then instances will suffice to show the difficulty of forming a complete list, or a list anything like complete, of the names of the ornaments known in the Punjab. Mr. Powell's list above alluded to professes to be provincial and to avoid merely local names; but from what has already been said it is obvious how difficult it is to distinguish local names from others. Certain words, for instance, which are not in Mr. Powell's list, such as *tád* for an armlet; *paunta*, *bánk* and *bichwa* for feet ornaments; *nasbi* for earrings; *taragri* or *tagri* for a zone, and *paccheli* for wristlets, are words in fairly general acceptation. I append a list of words culled from the district reports, which are, so far as I can see, unrepresented in Mr. Powell's general list, but which can well be compared with, and supplemented by, the list of local names given by Mr. Powell at pages 176—180 of his book. Some further local words will be found in the account of Kulu and Kángra ornaments noticed below: and Pashtu and other practically foreign terms are not included.

ORNAMENTS FOR THE HEAD.

Delhi.—Fath chánd.

Ludhiána.—Dori or paránda, kanda saryánwála.

Jháng.—Takhti, dhága, dánwani, chan tárá, jhummar, chot, bodi.

Gujránwála.—Paránda, máin, tavitri.

Gujrát.—Tawitri, chot.

Shahpur.—Chan.

Gurgáon.—Borla.

Umballa.—Koda.

Pesháwar.—Jál or galúna, taiga.

Dera Ismail Khan.—Chot.

ORNAMENTS FOR THE FOREHEAD.

Ludhiána.—Bungna, tahiti or much, bandi, bina, bend.

Jhang.—Takhti or patri.

Gujránwála.—Chánd, bina.
Shahpur.—Tawitri.
Gurgáon.—Mukh ká sáh.
Lahore.—Alián.

Ornaments for the Ears.

Delhi.—Chánd or bijli ka jora, magar chaudáni, lachke or khatke or jhulanyas, kan.
Ludhiána.—Dandi.
Jhang.—Dharán, popat patr, bunda.
Gujránwála.—Kangri.
Gujrát.—Dandi, bahaduri.
Shahpur.—Búnda, bhúlchi, kinti, nasbi, dhandu, pakla.
Muzaffargarh.—Denhún tilla, chílkán.
Dera Ismail Khan.—Nasbi.
Lahore.—Nasbi.
Pesháwar.—Burghi, aveza.

Ornaments for the Nose.

Jhang.—Chutki.
Gujránwála.—Chutki, bia, and baina (which are suspended from the nath).
Shahpur.—Tavitri, chutki.

Necklaces and Neck Ornaments.

Delhi.—Chandar kala, thussi, típ, dulara, pachlavá, satlava, nimanga, teota, gajra, baddhi.
Ludhiána.—Humel, tandira, badhaina, gudam, chouke, dholna.
Jhang.—Dholaṛá, lammi, dharamra, kaddhi, bohar, lar, wadháwa.
Gujránwála.—Lamínmála, durmaṛah.
Shahpur.—Kadhi, Lammi-jiwan-mála, dalbara, juva, dharmara, haweg, hatiali.
Muzaffargarh.—Patri.
Gurgáon.—Kathla, tora or guthwá or karidár.
Jullundur.—Anam.
Lahore.—Tulsi, wadháwa, kandhi.

Arm Ornaments.

Delhi.—Jaushan, bhuj, tádi tád, sehnage, yakka.
Jhang.—Dholna, jhabe (pendants of bhawatta).
Jhang, Gujrát, Shahpur and the Gujránwála Bár.—Tád.
Muzaffargarh.—Wang, kholandri, tánda, jhábe.
Gurgáon.—Bala, tádia.
Jullundur.—Bal, tad.
Amritsar.—Tád, gujai.
Jhelum.—Tád.
Shahpur.—Bálú.
Pesháwar.—Tek.

Bracelets.

Delhi.—Paccheli, pangrián or pankhriyán, naugri, pariband, dastband, lachche sarásaríki jori.
Ludhiána.—Pacheli, muthra, chhan.
Gujránwála.—Jut, sutra.
Shahpur.—Mutra, chunkangan, sutra.
Gurgáon.—Bordi, chan, pacheli.
Umballa.—Chan.
Lahore.—Bánk.
Muzaffargarh.—Dasti.

ORNAMENTS FOR THE WAIST.

Delhi.—Tágri, kamar peti.
Ludhiána.—Tarági.
Jhang.—Chelki, dolmiana.
Gujránwála.—Taragri, batwa, nala.
Shahpur.—Khalita or kharita.
Gurgáon.—Tagri.
Lahore.—Batua, nala.
Dera Ismail Khan.—Chelki, battua.

ORNAMENTS FOR THE FEET AND ANKLES.

Delhi.—Kare, sutri, sankli, jílu, payal, bánk, chúri, gujri, bichhwe, chulkiyan, challa, chelli, polri, karyan, anwat, pán.
Ludhiána.—Bánk, tora, mehndi, sangli, lachha, paunta, chará.
Jhang.—Núrá, pauntá, torá.
Gujránwála.—Tora, lacha.
Gujrát.—Lacha.
Shahpur.—Tarora, pauntá, jánjru, jauri.
Muzaffargarh.—Paunti, unwati (also nímakari, enamelled), trora, núra, chelki, churi.
Gurgáon.—Bánk, bichwa.
Umballa.—Bichwas.
Jullundur.—Pauntis, bánk.
Ludhiána.—Paunta.
Lahore.—Sut, mahndi, tora, chára, bánk.
Dera Ismail Khan.—Núra, paunta, tora, chaggal, mahawar, mahndi, amrat, bicchli, challa, nahian, sut, pakpan.

FINGER-RINGS.

Delhi.—Bánk, dáunah (used by Márwarís).
Jhang.—Cháp.
Gujrát.—Cháp challa.
Shahpur.—Tridodya.
Muzaffargarh.—Weṛh.
Dera Ismail Khan.—Phora or phori.

This copious vocabulary has its counterpart in a copious variety both of design and object, and there is no better way of gaining an insight into the general outline of the subject than to study Mr. Baden-Powell's account and Mr. Kipling's contributions to the District Gazetteers of the Province. I am not in a position to make any general remarks on the artistic merits of the various classes of work, and it would be impossible, if not out of place, to describe the different varieties of ornament. Some excellent drawings and photographs of common ornaments and tools have been furnished in the district reports, and some of these have been reproduced in this Monograph. The best I can do is, I think, to supplement these by some description of ornamentation in certain parts of the hills, where ornaments are most lavishly and most originally designed. The following, for instance, is a sketch furnished by Lála Chuni Lál, Extra Assistant Commissioner, regarding the ornaments of the wandering shepherds in Kangra known as Gaddís:—

"Ornaments for all parts of the body, with the exception of those for the nose, are of silver. The *bálú* (nosering) and *buláq*, the pendant in the shape of a spoon worn in the cartilage of the nose, are the only gold ones. The bust is the part of the body where the majority of ornaments are to be looked for. The crown of the head is not decked with any gold or silver ornaments, the temples being the highest place where ornamentation begins. A silver stud with a perforation is plaited into the hair on the temples on each side, and fanciful ornaments of this tinsel and artificial flowers, called *phalangrus*, are stuck into that perforation, for which otherwise there would have been no room. No portion of the ear is allowed to remain in the form which nature gave it. It is one perforated mass of flesh shorn of all its natural beauty. The edge is ornamented throughout with *phers*,

or small rings thickened through half their length with silver twisted wire curled round. These are all connected with the hair of the head by means of an ornament of enamelled silver in the shape of a bird, having hanging down from it a number of chains about two inches in length supplied with hooks which can pass through each *pher,* the bird-shaped button itself being at the top supplied with a hook fixed to a slight chain which is stuck into the hair of the head. This ornament is called *tolku.* String into these *phers* hang down flower-shaped silver pendants called *chhalka.* Even the *tragus* is not left unslit. A small silver ring supplied with ball-shaped pendants is worn in that part of the ear, called *litki, dhedkus,* or in the language of the plains *dhedus,* are worn in the lobes of the ears from which *jhumkas,* bill-shaped pendants, are suspended. From *dhedkus,* hooked to them, passes a *bandi* on each side of the forehead. There is another ornament also worn at the lobes; it is called *bála;* [of the form] of the circumference of a nosering supplied with ball-shaped pendants. So the ear ornaments are:—*phers, tolku, chhalka, litki, dhedkus, jhumka, bala;* and *bandi.* The ornaments worn round the neck are *galsari, champakali, jaumála* and *patki.* Besides these, a number of other necklaces is worn, a description of which is given in Mr. Baden-Powell's '*Punjab Manufactures*' at page 175 as worn by women in the Simla hills, and I cannot do better than quote it. The women have large necklaces of beads, and of rough bits of amber, red coral and turquoise pebbles. Besides these, strings of imported glass beads are worn. As regards the wrist and ankle ornaments, Gaddi women wear immense *pázebs* called *ghúnkarús* or anklets of zinc which close round the ankle. A pair is about 2½ pounds in weight. They are about six inches broad and are rudely engraved with devices. The majority of females wear zinc bracelets called "*gharolis*" on the wrist, and a few the same ornament of silver. The men wear only three or more *táwizes* strung together in form of a semi-circular necklace. The information will, I am sure, be very interesting, that the presence of certain ornaments on a female at once proclaims that, she is à *femme couverté* whereas their absence is the mark of widowhood. These ornaments are, to begin from the highest point, "*relu,*" and its attendant the *phalangru, bandi, bálú* (nosering), *buláq* (pendant for the cartilage of the nose) and *paubru* (brass rings for the small toes)."

Mr. Diack, Assistant Commissioner, Kulu, gives the following account of the Kulu ornaments:—

"(1). The most striking is the head gear worn by Kulu women commented on by Mr. Baden-Powell at page 175 of his '*Punjab Manufactures.*' The plate facing that page shows the portions of the head gear known as the *tora,* the *dhedhu* and the *jhumku.* The pendant tassels forming the lowest parts of the ornaments are known as *jhumku;* they are composed of silver balls and chains and are attached to the knobs above them which are of enamelled silver and are fixed in the slits in the lobes of the woman's ears. These knobs are called *dhedhu.* To them are fastened the two *tora* which fall gracefully over the temples and are affixed by silver hooks *(kunkshi)* to the centre of the coloured kerchief (*thipu*), which is tightly bound over the hair. From where the pair of *torás* meet on the kerchief depends the *tik,* a large enamelled ornament with silver pendants which hangs over the centre of the forehead. The *dhedhu* is further connected with head by the *tunki.* This ornament consists of two small pieces of silver, mutually connected by delicate silver chains; the lower is attached by similar chains to the *dhedhu* below, and the upper, in like manner, to a hook fastening it to the headkerchief above. The upper portion of the ear is weighed down by six or eight large earrings (*báli*) inserted in it, each about 2 inches in diameter and with its base studded with small silver balls soldered on to it and a tassel (*bundu*) of silver pendant hanging from it. To each ring is attached a small chain which connects it with another and smaller *tunki* above, which in its turn is fastened at the top of the head to the kerchief binding the hair; the object of the second *tunki* is useful as well as ornamental, for it serves to take some of the weight of the rings off the ear. The *tik* above referred to is sometimes varied by the *joth,* a similar but smaller ornament. It will be observed that the Kulu woman's pretty head gear must be no little burden to its owner, but much is endured for the sake of the vanity. These ornaments are invariably of silver.

"(2). Two nose ornaments are worn invariably of gold. The *buláq,* a leaf-shaped pendant ornament, is worn by both maids and wives, but never by widows; the *bálu,* however, a large ring similar to the earring above described, is in Kulu, as elsewhere, the distinguishing mark of a married woman. A charming rustic song celebrates a contest between a lover and his mistress as to whether his gift to her shall be a *bálu,* the sign of matrimony, which she insists upon, or some other of numerous jewels which signify nothing, and which are detailed in verse after verse of the song. The *bálu* is connected with the headkerchief by a slight silver chain to ease the strain on the nose.

"(3). A variety of silver necklaces are worn. They are composed of rings of black wood alternated with silver beads and are called *dod mál, jau mál, dar mál* and *makhawaji mál,* according as the silver beads are spherical, oval, round and flat, or oval with short horizontal prolongations on either side. In the *champakali* instead of silver beads there are sharp silver pendants, each nearly an inch long, a quarter of an inch in diameter at the base and tapering to a point. The *kanthi* is a necklace of closely strung spherical silver and coral beads, and the *kath mál* is a collection of seven short *kanthi* strings; the ends of the strings are attached to two triangular silver plates, one on either side of the chest, and from the centre of each of six of the seven strings hangs a small enamelled pendant.

"(4). The *kangnu* is a thick silver wristlet (bangle). It is an incomplete circle, and the extremities are often carved into the likeness of an animal's head.

"(5). *Langri* are anklelets made in the same fashion as a curb chain.

"As remarked by Mr. Baden-Powell, the Kulu men wear but little in the way of ornaments. Only occasionally a Kanait is seen wearing a necklace or an amulet; or a charm in memory of a deceased relative."

The following is Mr. Diack's account of the Spiti and Láhul jewellery:—

"The Spiti men wear more ornaments than the Kanaits of Kulu, but the precious metals find little favor with them. Nearly every man wears a necklace *(ultik)* composed of turquoises and lumps of coral, amber and mother-o-pearl roughly strung together, and a short pendant composed of the same materials hanging from either ear *(nakyu)*. Glass bead necklaces *(thang-nga)* are also often worn, and every second man has a *gaung* slung round his neck. The *gaung* is a small peculiarly shaped box; the body is of copper, but the front is of finely worked silver and gold with an orifice in the middle fitted with glass through which the *jantri* for which the box is the receptacle can be seen. These boxes are imported from Tibet, from which country also the turquoises and mother-o-pearl of the *ultik* and *perak* are imported. The amber and coral for the *ultik* are obtained from Ladákh or Bushahir and from Hindustán, respectively. Men and women alike wear the bangle or *dugu*. The most striking ornament worn by women is the *perak*, which consists of a strip of padded cloth generally red, hanging from the forehead nearly half way down the back, studded with turquoises and square silver talismans and possibly a sapphire or two. The stones and talismans are brought from Tibet, but the *peraks* are made up in the homes of the people. The *perak* is connected with either ear by the *puri*, an ornament consisting of four straight silver tubes, and by the *yarlen* or short chains which attach it to the earrings. The earrings *(konta)* worn are similar to those of the Kulu women, with similar tassel pendants *(chhibu)*. The *kanthi* necklace too seems to have been introduced from Kulu into Spiti, retaining its name there. An ornament (*ngun-leu*) somewhat resembling the Kulu *tora* (referred to above) is also worn.

"The men of Láhul like those of Kulu wear few or no ornaments. The women too wear less jewellery than those of Kulu or Spiti. The *perak* is unknown. A small saucer-shaped silver ornament (*kyir-byir-tea*) sometimes with a turquoise set in the middle of it, occupies the centre of the top of the head, plaited into the hair. Earrings and necklaces are also worn, and two strings of brass beads, with small brass balls appended at the ends hang from the girdle.

25. Observances relating to Ornaments.—Mussalmán males, in the more fanatical parts of the Province at least, consider themselves forbidden by their religion to wear gold ornaments or to wear ornaments of silver worth more than two annas each. With the Hindús, on the other hand, the boring of the ears for ornaments is a necessary and well-known religious rite. The Hindús too have a special reverence for gold, which is said to have its origin in the identification of the metal with Kuver, the god of wealth. It is an almost universal rule that no Hindu, man or woman, will wear gold below the waist or put the foot upon gold; and this feeling is current among Mussalmáns also, the only exception regarding which I have information being that of certain Kazzilbásh families in Pesháwar. In Simla no *chura*, *kolis* or low-caste man of any kind is supposed to wear gold at all. It is said further that all Hindús of whatever caste may drink from a gold cup without washing, but the question is probably not very often put to the test. To wear gold in the mouth too is among Hindus generally considered a sure means of salvation. A man with gold in his mouth cannot lie,* consequently many men prefer to do without it; the proverb says "*Lála, jo sona munh men dálkar baithe, to ki samai?* "How are you to get on, sir, if you keep wearing gold in your mouth." It is very common for Hindu men and women to wear on their right arm an ornament called the *anant* ("endless"), which is worshipped on the day of the *Anant Chaudas*, and which when broken is never re-cast but is given to the Brahmins. Another semi-religious ornament is the *mukat* or *tiára* worn by the bridegroon at a marriage, which contains squares in which are images in relief of *Ganesh*, *Shiv*, *Sakti*, *Brahm*, *Vishnu*, and sometimes also of *Kátik* and *Bhairon*. There is also the *Chandrama* or ornament worn round the neck as a charm against the influence of the moon, mostly by boys. The name "Nathu," which we hear so often, owes its origin to a similar superstition, common to Mussalmáns and Hindús, which leads parents who

* In his Gurgáon Settlement Report, Mr. Channing complains that the zamíndárs constantly required to be reminded of this. Note also the custom of putting gold in a dead man's mouth,—Karnál Settlement Report, para. 340.

have lost several children to put a "*nath*" into the nose of a boy at his birth; the *nath* protects him against evil influences and diseases, and is worn till his tenth or eleventh year.

Everywhere and among all classes the use of one kind of ornament rather than another will be found to distinguish different grades or sections or states of society. And what constitutes a distinction in one tract will constitute no distinction in another. Observances kept by one creed or race are not observed by another, or, if observed, are not observed so strictly. There is a good deal of curious information on such points to be extracted from the reports before me, but the information given is not given with any completeness or uniformity; and the subject is so very unbounded, and withal so loosely connected with the main point of this monograph, that I have not attempted to reduce it into shape and reproduce it here. The following simple instances will suffice to show how very varied custom is on such matters. You find it, for instance, an almost universal custom among Hindu brides to bedeck themselves with a vast amount of jewellery at and after marriage; but in Pesháwar the articles added by a bride to her maiden *repertoire* are the *nath*, the *chotiphul*, the *tawiz* and the *chárgul*, while in Jullundur, in addition to what she wears as a married woman, the bride wears the *mauli*, *bandi*, *tika*, *pariband* and *mehdi*. The period of excessive decoration lasts in Jullundur for a year from the date of the *mukláva* or home-taking, in Jhang for three or four months, in Mooltan for two years. Take a still more marked instance. You find almost universally, at least among Hindús, that the *nath* or nosering is the sign of the married state, no widow or unmarried girl, except it may be in the hills on festive occasions, ordinarily wears a *nath*. But you will find all sorts of additional peculiarities observed in different parts of the country. In Rohtak the Hindu widow also discards *chúrís* (bangles); in Gurgáon *bicchwás* (toerings), in Umballa *bicchwás*, *kodas* and all noisy forms of anklets; in Jullundur the *chauk* and *phul*, in Jhang *chúrás* *jhumkas*, *núras*, *karís* and the *tika*; in Montgomery the *chauk*, *phul* and *jhumka*; in Lahore the *chauk*, *chúrás* and *karís*; in Jhelum all head-ornaments, and in Pesháwar the *chotiphul*, *tawíz* and *chárgul*. In Umballa the widow's earrings and other ornaments including the *laung* or nosestud will generally be simple, without stones; in Ludhiána the widow only wears *churís*, *kundís* and a *hasli*; in Amritsar only small earrings, a *tád* and a wire necklace; in Lahore a *tád*, *wálís*, a *hár* of *mohars* or *kanthi* round the neck, and one *churi* or *band* on either arm; in Gurdáspur armlets and earrings only, and in Muzaffargarh only *karís*, *kangans*, *wálís* and *dhedís*. In Gujrát she will generally abstain from ornaments, but will not provoke criticisms as long as she avoids wearing the *nath*. In Jullundur she will wear no ornaments at all for a year after her husband's death; in Kulu for four years; in Gurdáspur for one or two years; whereas in Ludhiana it is said that, while other relations discard ornaments for ten days after the husband's death, the widow alone is allowed to wear from the beginning such ornaments as she is permitted to retain. The above arrangements are modified on remarriage in various ways. And by Muhammadans they are often either not observed, or observed with greater laxity than by Hindús. And even among Hindús there is a difference between the observance of such rules in the country and in towns.

There is of course a fashion in ornaments. In Gurgáon they say fashion does not change; and in Pesháwar that it changes only among those, such as the inhabitants of Pesháwar City and its neighbourhood, who wear ornaments of the Hindu type. But in other districts one generally finds the fashion in small districts changing from day to day. There is a general opinion that the class of ornament now used is less solid, more fanciful in its workmanship, lighter in form and more brittle in use than that of a generation ago. The cost of any ordinary middle and upper class ornaments has probably increased; but the use of excessively costly jewellery has decreased. The use of knobs and pendants, and the setting of ornaments with stones is, among all but the very highest classes, an innovation dating from after Sikh days. The general impression throughout the Province undoubtedly is that more ornaments are worn now than were worn a generation ago; in some districts people say that the amount now worn is twice, in others three, four, or as much as six times, as much as formerly. The

number of varieties has certainly increased in Jullundur: for instance, they say the last generation was content with 12 varieties, whereas now at least 37 kinds of gold ornaments and 33 kinds of silver are known in the district. In Lahore the proportion of gold to silver is said to have increased, and at the same time the use of the silver covered with gold leaf is much more in vogue.

26. Ornaments in the Market.—Ornaments are *pawned* to *sráfs* and *sunárs*, who will advance on them an amount equal to about 25 per cent. less than their value. A *sráf* is said to charge interest on the amount of 8 annas or 1 per cent. a month, and a *sunár* will charge even more. It is generally a wise precaution to get a written description of the article pawned from the goldsmith along with his bare acknowledgment. Actual money-lending on security, other than that of ornaments, is not usually part of a *sunár's* regular business; and it is rather the exception to find a *sunár* a professional money-lender.

I am not aware whether the *sunár* ever lends ready-made jewellery, except perhaps the *mukat* or *bridegroom's tiára*, of which he will often have a few in stock. A *sráf* apparently does lend ready-made jewellery, and he will also lend vessels of gold and silver for festive purposes. Among the women themselves it is a very common practice to borrow jewellery from one's neighbours for special occasions. In some cities the wives of Munshís and Clerks and persons in good station make a very good thing out of the lending of their ornaments, charging their poorer neighbours very stiff interest, Re. 1-9-0 or even Rs. 3-2-0 per mensem. The ordinary rate of hire in Kulu is 2 annas a rupee per annum, and the charge is there known usually as "*gosha*." The lending of ornaments is, however, done sometimes with little or no precautions; and occasionally unscrupulous persons decamp after collecting large amounts in this way.

As has been already noticed above, it is only exceptionally and in large towns that ornaments are kept ready made for sale. In Delhi there are said to be some 225 pedlars of prepared goods; but there are only 20 shops in Delhi where you can go and buy jewellery ready-made; and of these eight deal in English goods only. The greater number of these ready-made dealers are Sarogi Oswáls; the rest being other Banyás of kinds and 4 or 5 Khatrís. In Siálkot this class of business is in the hands of Bhábrás who employ goldsmiths to make articles for them. This class of men is known in Delhi by the name of *jauhari*, and although he will sometimes deal in plain ornaments, it is generally to the precious stones and the ornaments set with jewels that he looks for his profit.

It is very difficult to give any estimate of value regarding the gross cost of the various kinds of ornaments. A pair of gold bracelets (*kangan* or *kara*) is said to cost Rs. 200 to 500 in Dera Gházi Khan; Rs. 200 to 700 in Muzaffargarh; Rs. 300 to 800 in Pesháwar; Rs. 300 to 1,000 in Kángra; Rs. 500 to 700 in Hazára; Rs. 500 to 1,000 in Lahore; and about Rs. 1,000 in Kohát. A golden *hassi* or solid necklace costs Rs. 60 in Dera Gházi Khan and Rs. 60 to 90 in Muzaffargarh; but it varies in size, and the value given in Hazára and Kohát is Rs. 1,000. Noserings (*naths*) of gold cost Rs. 30 to 90 in Muzaffargarh; Rs. 25 to 50 in Jhang; and Rs. 40 to 60 in Pesháwar. A Muhammadan woman's *nath* in Kohát costs Rs. 40, a Hindú's 100. The golden head ornament known as a *chaunk* costs Rs. 50 to 100 in Lahore; Rs. 25 to 100 in Jhang; Rs. 30 to 100 in Gujránwála, and Rs. 200 in Kohát. The *ársi* or thumbring, if of gold, will cost Rs. 30 to 50 in Peshawar; Rs. 70 in Gujránwála; Rs. 50 to 100 in Jhang; and Rs. 100 to 200 in Hazára; and so on with the other gold ornaments. It is equally impossible to fix down the price of silver ornaments, but the following figures may serve as a guide. Bangles or *chúrás* of silver are got for Rs. 50 to 150 the set in Lahore; Rs. 22 to 65-8-0 in Jhang; Rs. 30 to 100 in Kángra. A pair of *pázebs* or anklets costs Rs. 20 to 60 in Kángra and Rs. 30 to 50 in Lahore. In Gujránwála common earrings (*wála*) costs 6 or 7 rupees; and simple rings with stones or coloured glass set in them can be got for 12 annas or a rupee. A silver *ársi* will cost 4 or 5 rupees. The uncertainty of the prices above quoted could doubtless be removed to some extent by further investigation; but the infinite variety of the work renders precision difficult; and, besides, the people in their transaction are not accustomed to look at the question in this way, the price being usually settled by the weight or by some of the other considerations noticed above.

27. The future of Gold and Silver Ornaments.—The use of ornaments appears in this country so universal, and to most minds so excessive, that the subject has attracted some attention from a social point of view. The Punjábí is probably as profuse in ornamentation as the native of any other part of the plains of India; foreigners in this Province at any rate, such as Parsis, Bangálís and the like, are far more sparing than the native Punjábí in the ornamentation of themselves and their wives. The actual amount of potential wealth that the native locks up in jewellery is something beyond conception. Europeans in dealing with the subject are far more inclined to under than to over-value the amount of ornaments which a native family, in whatever rank of life, possesses. And yet every day in large civil cases, in suits for dower, in dealing with Wards' estates, in cases of elopements, thefts, burglaries, murders and a thousand other ways, Civil Officers are constantly being confronted with this enormous mass of wealth, lying in the coffers of the people. A competent authority guesses that in Amritsar City alone there are jewels to the value of two million pounds sterling. In Kulu the ornaments are estimated at a lakh-and-a-half; and the gold and silver attached to *deotas* at 3 lakhs. The Jullundur estimate is 4 lakhs, which is probably below the mark; that of Montgomery—50 lakhs—is possibly above it. In Jhelum two-fifths of the wealth of the district is said to be in ornaments. If we estimate the existing ornaments at twelve times the annual outturn, those of the Gurgáon District must be valued at over ten lakhs. In Dera Ismail Khan, at 5 rupees to each woman, the ornaments of the district must exceed ten lakhs in value; and we should probably add two lakhs to this estimate for the ornaments in the families of the Nawábs and other Raises. In Kohát, again, (probably one of the poorest districts of the Province in this respect,) the estimate is taken at Rs. 800 for each Hindú family, and Rs. 10 for each Mussalmán family, and a lakh in aggregate for the Nawáb and other Raises; making a total for the district of 75 lakhs. This estimate is doubtless an exaggeration, but even a more exact calculation would probably surprise us in its results. These isolated instances will serve better than any formal estimate to show the extent to which the system is carried in the Province.

The main evil which is laid at the door of this system is the loss of wealth. Another is the incentive to crime; in Dera Ismail Khan, for instance, it has been calculated that in one year, out of 968 cases of burglary, house-breaking and dacoity 824 were connected with jewellery. Advocates, therefore, of economic and social progress look forward to a diminution of the stock of ornaments in the country, and it is not improbable that under our rule such a diminution will take place. The steps taken to reduce marriage expenses will doubtless do something, though perhaps not very much, in the direction. The spread of English or Anglicized education will probably do more; for it is noticed that the classes so educated are on the whole simple in their habits in this respect. And if anything occurs to give a general impetus to commercial enterprize and mutual confidence, opening opportunities for invesment, the use of ornaments may be extensively diminished. But any such changes can only be most gradual, and there are obstacles in their way. The "female vote" is one. The enormous respect for jewellery among the people as a criterion of respectability is another. And the distinctly agricultural, and commercially unenterprizing, character of the class which mainly upholds the system is another. There is no fear, therefore, of the practice of ornamentation dying out; and the position of the *sunárs* appears a fairly assured one. European competition has as yet had little influence on the articles prepared for native custom. False jewellery, except in large towns or among the very poorest classes, is not largely sought after. The general character of the popular type of gold and silver work is rough and unfinished; it is more likely to improve than to deteriorate, and for its improvement it is at present being left to itself.

APPENDIX.

I.—INSTRUMENTS—

1, Jandri; 2, Reza; 3, Nál; 4, Aihran; 5, Kutháli; 6, Katwa; 7, Sannu; 8, Thappa Chúrián.

II.—ORNAMENTS—

1, Chaunk of gold; 2, Phúl of gold; 3, Choti phúl of silver; 4, Wáli of gold; 5 and 6, Naths of gold; 7, Laung of gold; 8, Nám of gold; 9, Hass of silver; 10, Chúri of silver; 11, Kangan of silver; 12, Karra of silver; 13, Mundri of gold and of silver; 14, Arsi of gold and of silver; 15, Buhatte of gold; 16, Jhánjar of silver; 17, Pazeb of silver; 18, Nure of silver.

III.—CRAFTSMEN AT WORK—

1, Kandlakash; 2, Tárkash; 3, Dhabkai.

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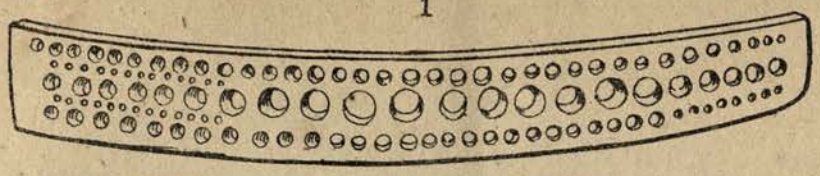

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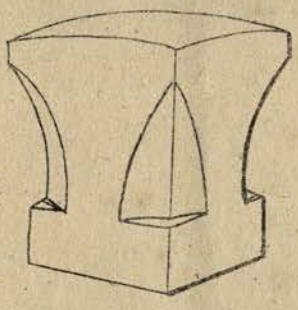

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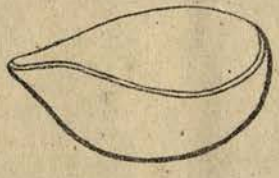

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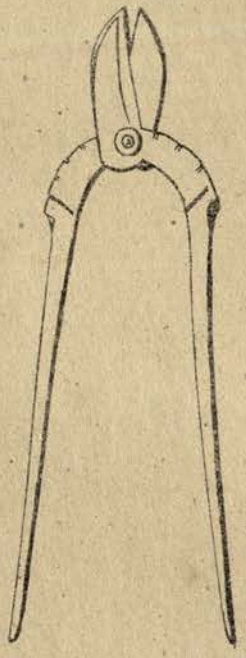

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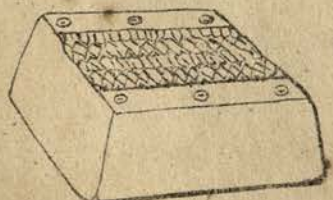

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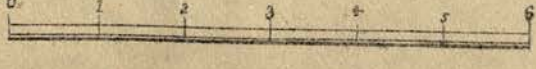

CIVIL & MILITARY GAZETTE LAHORE.

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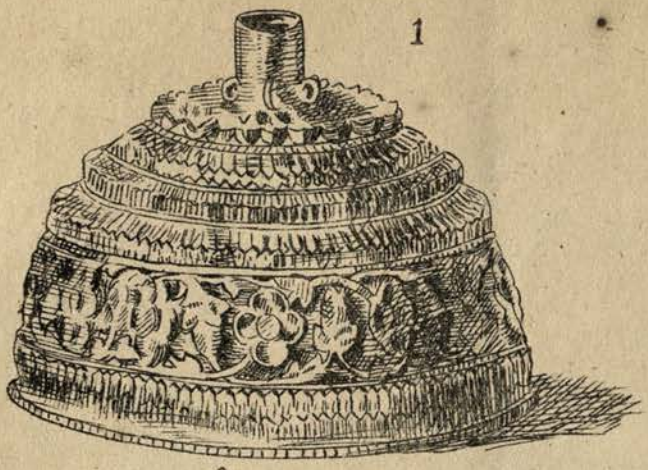

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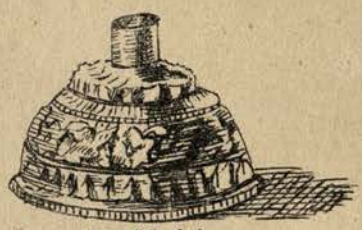

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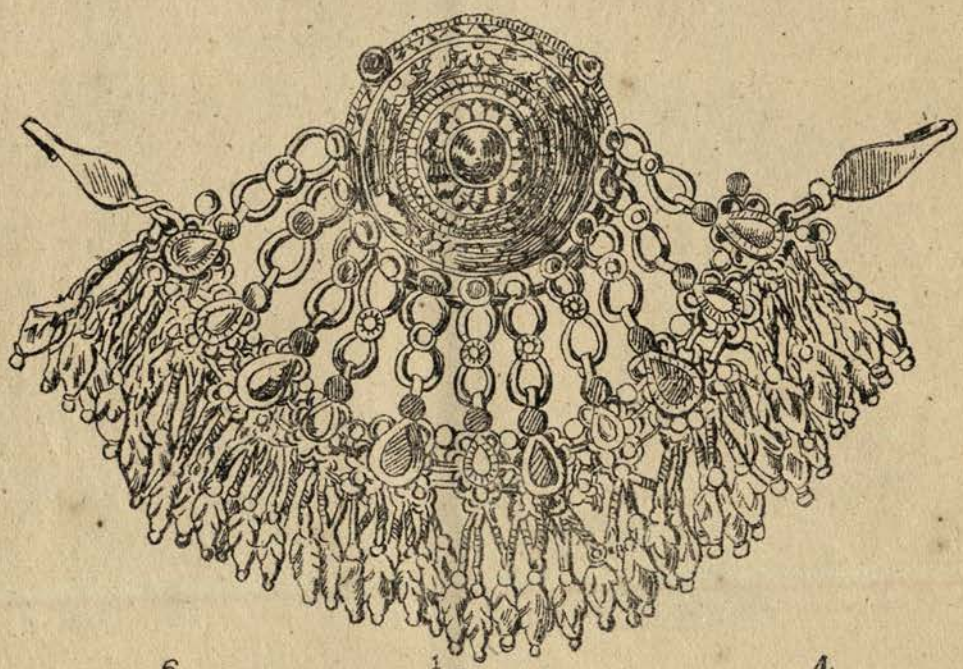

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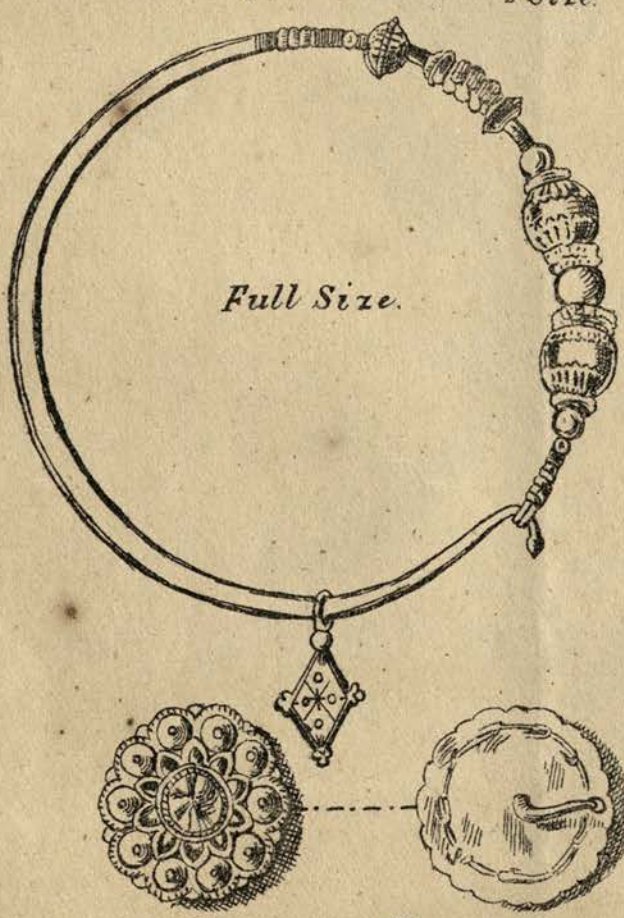

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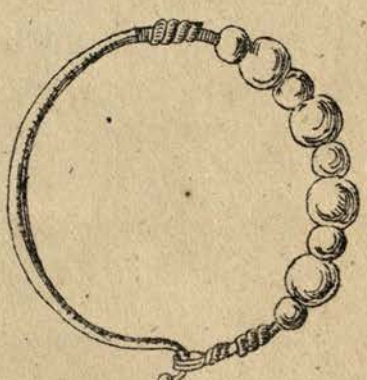

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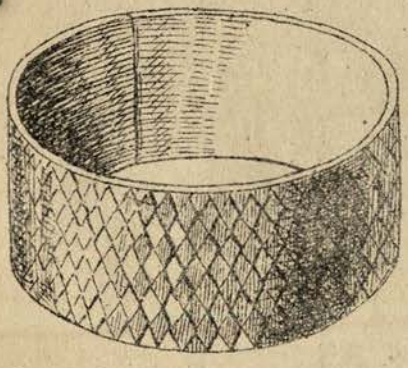

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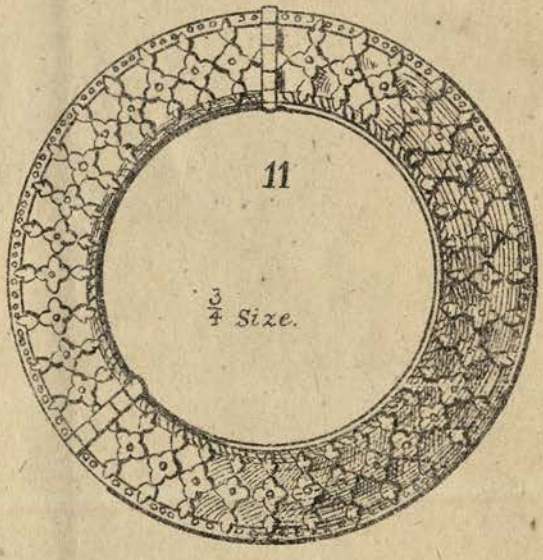

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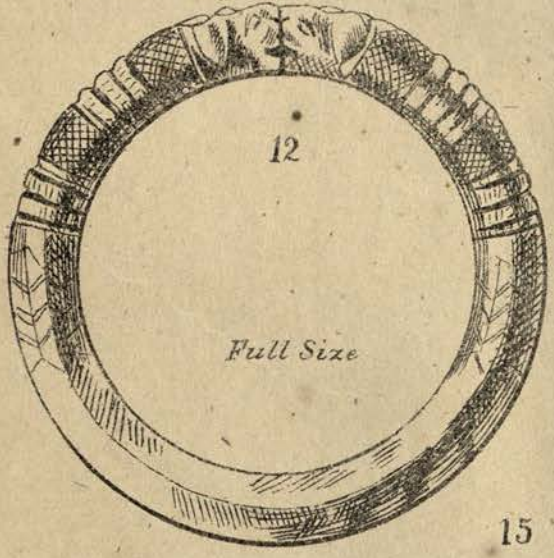

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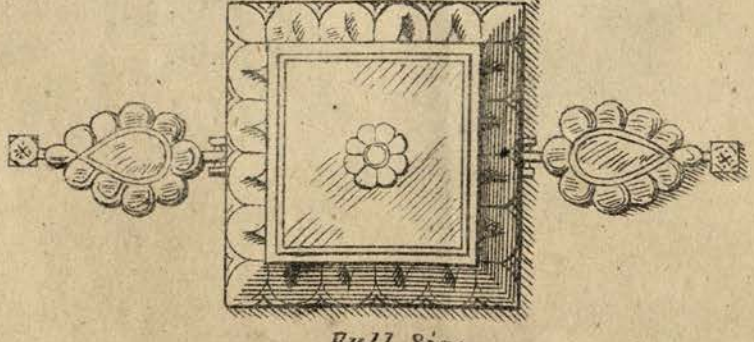

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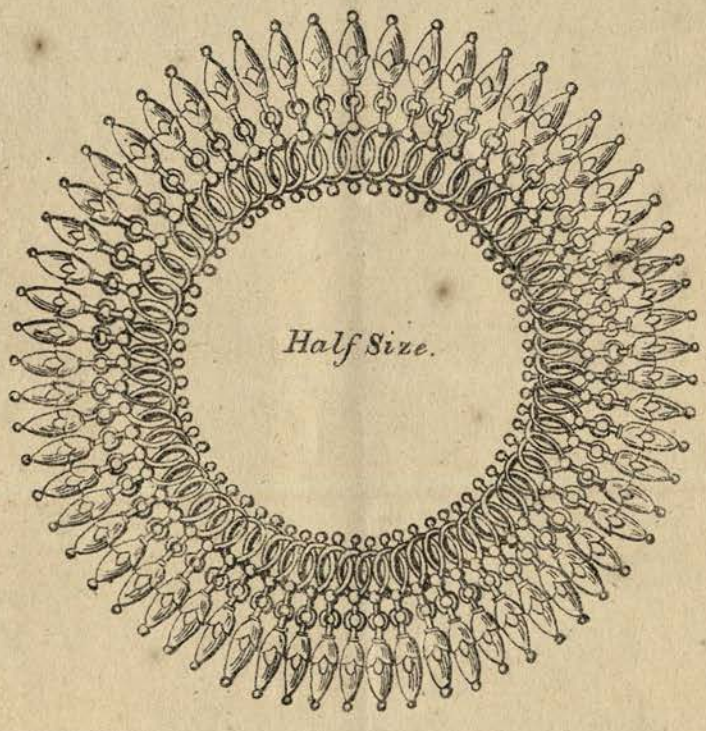

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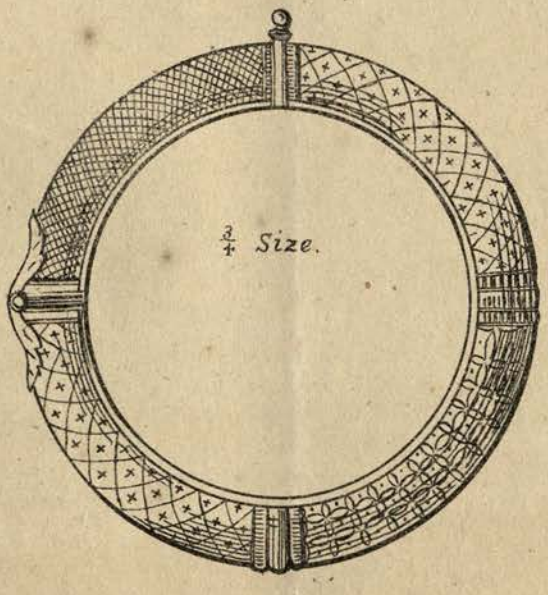

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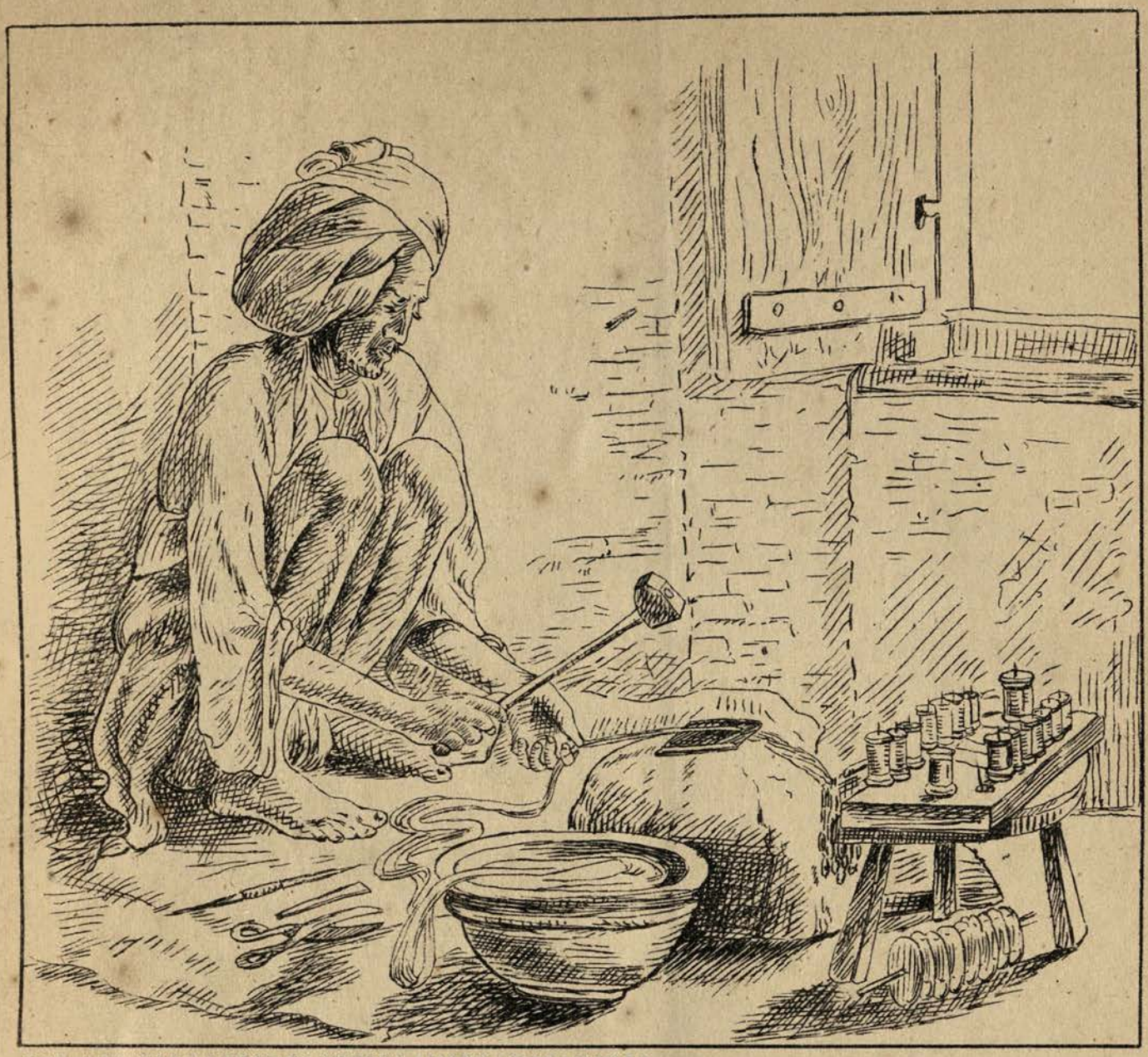

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MONOGRAPH

ON

FIBROUS MANUFACTURES

IN THE

PUNJAB.

BY

W. H. GEE, B.C.S.,
DISTRICT JUDGE,
Dera Ghazi Khan.

1889-90.

Published by Authority.

Price Re. 0-10-0.

Lahore:
THE "CIVIL AND MILITARY GAZETTE" PRESS,
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1891.

BOMBAY BRANCH
OF THE
Royal Asiatic Society.
CLASS

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1891.

No. 798 S.

FROM

R. G. THOMSON, ESQUIRE,

Offg. Revenue Secretary to Government,

Punjab and its Dependencies,

To

THE JUNIOR SECRETARY TO THE FINANCIAL COMMISSIONERS, PUNJAB.

Dated Simla, 23rd September 1891.

Revenue and Agriculture.

General.

SIR,

I AM directed to acknowledge the receipt of your letter No. 476, dated the 12th of August 1891, submitting the Monograph on Fibrous Manufactures in the Punjab by Mr. W. H. Gee, Officiating District Judge, Dera Gházi Khan, and to say that it has been compiled with industry and care, and that it has brought together in an useful manner a considerable body of interesting facts.

2. I am to request that the Financial Commissioner will consult the Conservator of Forests, Punjab, as to the possibility of extending the cultivation of the dwarf palm in the Government forests of Ráwalpindi, Jhelum and Shahpur.

I have, &c.,

R. G. THOMSON,

Offg. Revenue Secretary to Government, Punjab.

Punjab Government Press, Lahore—5-10-91—550.

No. 476.

FROM

D. C. JOHNSTONE, ESQUIRE,

Junior Secretary to Financial Commissioner, Punjab,

To

R. G. THOMSON, ESQUIRE,

Revenue Secretary to Government, Punjab.

Dated LAHORE, *the* 12*th August* 1891.

SIR,

I AM directed to submit 350 copies of a Monograph on Fibrous Manufactures in the Punjab, drawn up under the orders of the Financial Commissioner by Mr. H. W. Gee, B. C. S., and to say that, in Mr. Elsmie's opinion, Mr. Gee has written a good and interesting paper in which he has clearly summarized all the information which it has been possible to collect upon the subject. The best district reports appear to be those from Simla (Mr. Coldstream), Kángra (Lála Chúni Lál, Extra Assistant Commissioner), Kulu (Mr. A. H. Diack, C. S.), Gurdáspur (Colonel J. B. Hutchinson), Lahore (Mr. Sykes, Assistant Commissioner), Mooltan (Díwán Narendra Náth, Assistant Commissioner), Kohát (Captain H. P. P. Leigh), and Dera Ismail Khan (Lála Jawála Parshád, Extra Assistant Commissioner). The reports for Gurgáon (Pandit Joti Parshád) and Ferozepore (Lála Kidár Náth) also deserve commendation.

2. The instructions issued by the Financial Commissioner are contained in Circular No. 29 of 1890. The Monograph opens with a general description of fibrous plants, their localities and uses, and under this head gives valuable information regarding the *Saccharum* family, grasses and bulrushes, *san* and *sankokra*, flax, hemp, bamboo, and many Himalayan and plains trees whose fibre is useful in manufactures. The account of Mr. Tucker's measures for preventing the extermination of the *mazri* or dwarf palm in Kohát is interesting. The industry appears to be almost wholly in the hands of the lower castes of the population; and the circumstances are such that correct statistics regarding outturn and export and import of raw material are difficult to procure. Wages earned in the trade seem to be low; and though the rate of profits is sufficiently high, the petty extent of the trade renders profits really insignificant. In para. 16 Mr. Gee discusses the trade in manufactured articles. Imports are not inconsiderable, but exports from the Province are said to be small, showing that the industry as a whole is not in this Province a very extensive or valuable one. The movement of raw material and manufactured goods within the Province is summarized in the same paragraph. Under the head Local Manufactures (para. 17 *et seq.*) Mr. Gee describes the processes of, and gives other information regarding, the following branches of the industry, *viz.*, *tát*-making, carpets and matting, rope-making, basket-making, chick-making, nets, hill-shoes and fans. Under all these heads the details given are interesting and sufficient. Regarding the important subject of paper-making, the compiler comments upon the state of the trade in Siálkot, Delhi, Mooltan and the Native State of Bhajji, and then goes on to give some information regarding jail paper. In connection with this the Financial Commissioner has directed, in order to make the paper more complete, the addition, as Appendix IV, of a reprint of Dr. Gray's note referred to in para. 31 of the Monograph. The other appendices to the Report seem to the Financial Commissioner to contain useful facts and figures.

I have, &c.,

D. C. JOHNSTONE,

Junior Secy. to Finl. Commr., Punjab.

MONOGRAPH

ON

FIBROUS MANUFACTURES IN THE PUNJAB.

1. The scope of this enquiry has been confined chiefly to classes of fibres which are actually utilized in local manufactures, and no attempt has been made in the District reports to deal with those classes of potential products which are as yet little known or unused among the people of this Province. India possesses a number of plants—many of them valuable as articles of food—which yield excellent fibres for purposes of paper making, textile fabrics, matting and cordage. The actual uses to which fibres are put in the Punjab are confined chiefly to the manufacture by the zamíndárs themselves of a variety of agricultural and domestic articles, which rarely command any extensive sale among outsiders.

The only exceptions to this are the weaving of a coarse tát from san, which is made up into gunny-bags, and the application of a few fibres, principally san in its manufactured state, to paper making. The trade in dwarf palm from the North-West Frontier seems to be developing, and is certainly the most promising of these industries. The trade in bamboo from the Himalayan districts, though it is widely distributed over the plain districts, is not very extensive, probably owing to a limit in the supply.

Subject to these exceptions there is little external trade in fibres. In each district the zamíndárs utilize whatever plants may grow abundantly for purposes of making ropes of all kinds, mats, chicks, nets, baskets and the like; if the local supply be insufficient, a certain amount of raw material and perhaps of manfuactured articles may be imported from the neighbouring districts, but the production of these articles can hardly be dignified by the name of a trade. In no case do any class of people obtain a living by it. Among those castes which are more especially employed in fibrous manufactures—such as Jinwárs, Labánás and Musallís—no worker can support himself solely on his earnings: as a rule he works for a part of the year when raw material is abundant; for the rest he is an agriculturalist. A large number of zamíndárs employ their spare time in the winter months by extracting the fibres from the munj, san, sankokra and other plants, and twisting them into twine, well ropes, cattle ropes, etc., but they do not work for the market.

GENERAL DESCRIPTION OF FIBROUS PLANTS, THEIR LOCALITIES AND USES.

2. *Munj.*—Of the *Saccharum* family there are at least three species common in nearly every district, *viz.*, the *Saccharum munja*, the true munj, the sheaths and spathe of which are especially valuable for rope making; the *Saccharum sara*, known as sarkanda or kána, the largest reed of the three, used chiefly in chick and screen making; the *Saccharum spontaneum*, kánh or káhi, used occasionally for ropes, but generally for chicks and thatching, the stem also forming the material for pens.

The munj and its varieties are undoubtedly the commonest and most useful of all our fibrous products. The rapidity of its reproduction, the strength of its fibres, and the ease with which it is collected and worked up, all combine to render it indispensable to the zamíndár. It is to be found on low damp ground near lakes and rivers, and a sandy soil is favourable to its growth. The only district in which it is actually cultivated is Jhelum, where 60 acres are annually planted with bulbs in the rainy season.

The plant matures after two years, and then an annual supply of munj can be obtained from it. It shoots in the spring, and is cut in autumn; the bundles are then stacked until the slack season arrives, when the villagers

extract the fibres by beating the sheaths with a wooden mallet, five sérs of munj being an average day's work. The thick ends of the sheaths are sometimes burnt first in order to render the separation of the fibres easier. Only the sheaths of the three upper joints of the stem are used for munj making, those below being too coarse for the purpose. In Mooltan the owner of the land generally employs labourers to cut the plant, he taking one quarter and they three quarters of the amount cut; if paid in cash they get 4 annas a day.

The different parts of the plant are known as follows:—

Sar or Sarkara, the coarse leaves at the base only used for thatching purposes.

Kána or Sarkanda, the knotted stem when stripped of the munj.

Munj, the sheaths and spathe of the stem.

Tili, the finer part of the stem without knots.

Sirka or Sirki, the tapering flower stalk.

The last two parts are not always distinguished by separate names, sirka being used as the name for both. From the kána are made chicks, morhas, baskets, sieves (chaj), pieces of roofing, nechás (huqqa tubes), and gatlas (part of the huqqa). From the smooth tili are made fine chicks, baskets and fine sieves. The flower stalks are made into sirkís for roofing and into brooms.

From the munj is made the well known bán munj, universally used for stringing charpoys, and ropes of all kinds. As the fibre does not rot by exposure, it is particularly adapted for well ropes (máhal). Among other articles made from bán are matting, trangar (tangar), a net for holding bhoosa and other heavy loads, chinka (chikka), a net hung from the ceiling to store things in, and indwís or porters' knots. Brushes and moulds for metal wares are also made out of the fibre.

3. The dib, or bulrush (*Typha elephantina* or *angustifolia*), is common in the marshy ground of many of the plain districts, especially along the alluvial lands of the Indus and on hill torrents. It is used for ropes, but more generally for mats if mazri is not obtainable. The consumption is local, except in Dera Ismail Khan, where 5,000 rupees worth is imported from Bannú and Muzaffargarh to make mats for the protection of the ripening dates. With this exception the outturn is inconsiderable, and there is no trade in it.

The bhábar (*Andropogon involutus*) is a grass which is in places extensively used for bán and ropes. It is noted as occuring in Delhi, Hissár, Jhelum and Gujránwála, but not beyond the Salt Range. It is brought into Jhelum in large quantities, and used by the poorer people for charpoy string and well ropes of an inferior quality. Similar to this in name—for both seem to be called bhagar or bhábar indiscriminately—is the *Eriophorum comosum*, which grows in the Siwáliks, and is certainly used in Kángra for ropes and hill shoes, and probably in Hoshiárpur also. The *Andropogon involutus* is mentioned as occurring in Náhan, Nálagarh and Bhagat.

The Dab (*Anatherium muricatum*), which is also known as panni or khari, is found more generally in the Delhi Division than anywere else, though it is mentioned in the Lahore, Jhang, Jullundur and Gujránwála reports. It is useful as a thatching material, but the ropes made of it are very inferior. The best known part of it is the root, 'khas,' from which tatties are made.

No other grasses are regularly worked up, though here and there the people use them in default of better kinds. In Shahpur three kinds are worthy of mention, *viz.*, the Chujan, Pataka and Kai grasses—the first two of which are used for charpoy string and ropes, the latter for boat cables. In Spiti, a grass called 'sashok' is used to make a coarse kind of paper; other kinds are useful in the Himalayas for hill shoes.

4. *San and Sankokra.*—The san or sanni (*Crotolaria juncea*) is by far the most important of the exogenous plants, and is cultivated in nearly every district of the Province: Trans-Indus, from Pesháwár to Dera Gházi Khan, it is

however not extensively grown, owing to the fact that mazri is cheaper and easily obtainable by the agricultural classes. The plant is commonly known as Indian hemp, although it has no botanical connection with the true hemp (*Cannabis sativa*). The *Hibiscus cannabinus* (sankokra or patsan) may be conveniently mentioned with it, as it is found in the same localities as san, though its use is comparatively small. The patsan is generally grown in strips round crops of cotton, jowár or sugar to form a hedge for protection against cattle: the fibres are very long, sometimes measuring five or six feet, but they do not possess the strength of the san fibre.

The seed of both is sown in June or July, and the plant is ready to cut about November. The stalks are then tied into bundles (juris), and steeped in the village ponds for one or two weeks, according to the season of the year; the hotter the season, the quicker the decomposition of cellular matter is effected. At the beginning of October the process will be complete in a week, whereas twice that time is necessary in the cold weather. The bark is now easily separable from the stalk, and the cellular tissue is removed from the fibres by beating the bundles on the top of the water. This final process is sometimes postponed till the slack season, and the stalks are stacked in the meantime. It is estimated that the outturn of san from an acre of irrigated land is five maunds, and from an acre of báráni land one to two maunds. Every zamíndár sows a few kanáls with san for his own use, and sells the surplus. The districts in which san is most largely produced seem to be Gurgáon, Hissár, Jullundur, Hoshiárpur and Siálkot. The chief trade is in Hoshiárpur, where the value of the annual outturn is estimated at Rs. 22,000, of which Rs. 10,000 worth is exported to other districts.

The chief articles made from san and sankokra are bán, ropes, máhals, nets, chinkás, trangar, money-bags; and the bán is used for charpoys, morhas, dulís, pakhulís (sides of carts), seats for bullock-carts, and mats. The common tát or gunny—the only fabric made—is woven from san fibres.

The khip (*Crotolaria burhea*) is found in the arid parts of some districts, such as Jhang and Dera Gházi Khan, but it is rarely used. Ropes made of its fibre, though cheaper than san, are too weak for rough work. San is in considerable demand at Lahore, and there is a good import trade from Jullundur and Hoshiárpur.

5. *Flax* (alsi).—Flax is cultivated in the Punjab, not for its fibre, but for its seed, which is valuable for the oil obtained from it, and for fodder. It does not appear to be spun anywhere, although Baden-Powell ("Punjab Manufactures") mentions that canvas has been made of it in some jails. From 1863 operations in raising flax were commenced by a company at Siálkot, but after a few years they were brought to a close. The flax plant stands about 2½ feet high, and the seeds are contained in the shoots on the stem. The fibres are separated by beating out the slender stems until they become smooth and glossy; bán and ropes (hand twisted) are made in Hoshiárpur and Gurdáspur; at Shakargarh, in the latter district, a very fine quality is said to be obtained.

6. The bhang (*Cannabis sativa*) grows wild in many districts, both Cis- and Trans-Indus, and flourishes in the Himalayas. In the plains it is little used except as a drug, but in the hills the value of its fibre is known and appreciated. The hill variety when cultivated is much larger and finer than the wild bhang, often attaining a height of 12 to 14 feet. It is cultivated throughout Kulu, but grows best along the Jalori ridge in the Plách tahsíl. The fibre is worked up into ropes, shoes, fishing-nets, bird-nets and bags all of a strong, durable nature. Among the Hill States, Kumharsen, Jubal, Kyunthal and Bajji are mentioned as using it. Another useful hill plant is the Himalayan nettle (*Urtica Heterophylla*), which is found in most of the hill districts and Native States. The common name is bichua, but there are numerous local terms, such as ahan and jaráhan (Kángra), káral, kárla or bhaunar (Native States). The plant is cut in September or October, the reaper protecting his hand from the sting with a sheep skin gauntlet. When thoroughly dry it is steeped in water for three or four days; the fibre is then stripped off and worked up by hand into string, which is in turn used for ropes, fishing-nets or shoes. The fibre is inferior to hemp, but more easily obtainable and cheaper.

The proprietress of the Rám Bágh garden, near Kángra, sends small quantities of this fibre to England, where it is woven into scarves and handkerchiefs.

7. Two species of madar or ak are known to the Punjab—the *Calotropis Hamiltonii*, which is fairly common in the barren parts of the plain districts (*e. g.*, Rohtak, Lahore, Shahpur and Trans-Indus), and the *C. gigantea*, a larger plant, which is found in Hissár and Ferozepore in great abundance. The fibres of the stalk are used for rope making in the two last named districts; the ropes are stronger and softer than san ropes and have a glossy appearance. The plant is cut in the cold weather when the leaf is off and the sap is down; the stalks are then tied up in bundles and placed in a perpendicular position, where they are left till the slack season. The fibrous bark is then peeled off and the fibres detached by hand-rubbing or scraping. The Mohánás on the Indus make a net out of it for fishing purposes, called 'nára,' value Rs. 2 to 4. The only use to which the floss of the seed pod is ever put is to stuff pillows; there is a difficulty about spinning it, and attempts hitherto made in that direction have not been very successful. A napkin made of the floss was exhibited at the Punjab Exhibition in 1884, and also some towels, but there does not appear to be much prospect of its ever being turned to much account. The cost of collection is a difficulty in the way of its being exported on a large scale. In the Lahore district the plant is said to be subject to the attacks of locusts. In the Shahpur Jail attempts have been made to utilize it for paper making.

Two sorts of aloe are common in many parts of the Province, *viz.*, the *Agave Americana* and the *A. Cantala*. It is almost indigenous, and is often seen as a hedge in Lahore and Amritsár districts. The fibre is a good deal used in jails, but rarely outside. The process of manufacture is as follows: two or three of the longest leaves are tied together and beaten with a flat mallet on a flat piece of board; the cellular tissue is then washed away in a nand of water. Eight chittácks a day is a prisoner's task: but it depends entirely on the care he takes and on the use of freshly cut leaves whether he produces this amount or not. The fibre is beautifully white and takes dye much better than even munj, but it is not so strong or durable. Durrees, mats and ropes are turned out, but the supply, as the plant is a slow grower, is liable to become exhausted.

8. *Bamboo.*—There are four species of bamboo found in the Himalayas, *viz.*:—

(1) The *Bambusa stricta*, or male bamboo (jungli báns, benj, kirro).—Wild in the Siwáliks; a few clumps found in the Salt Range. The tall blue-stemmed cultivated variety of this is known as chau (Simla) or nál (Hoshiárpur).

(2) *Bambusa arundinacea*, female bamboo (magar báns, nál báns, bushára (Simla hills)); large and hollow.

(3) *Arundinaria utilis*, nirgal.—A small hill variety, growing at elevations of 5,000 to 8,000 feet up to the Rávi.

(4) *Arundinaria falcata*, gáru.—Smaller and tougher than (3), growing up to an elevation of 12,000 feet up to the Beás.

In Hoshiárpur the value of the bamboo (*B. stricta*) annually worked up is Rs. 1,900, the articles made being chiefly baskets, chicks, screens, sieves, etc. The cane is cut into strips, cleaned, and then plaited in the shape desired. In the Pathánkot tahsíl, where it grows extensively, the annual value produced is Rs. 4,000, of which half is exported. The larger canes are used chiefly for roofing, flooring, posts and frames of huts, bridges, fences, boat-fittings, shafts, dulís and large verandah chicks: the soft thin slips are employed in making baskets of every description, stools, portmanteaus, bird-cages (especially at Batála), scales and chábás (baskets for head). There is also a trade in tent poles with the Commissariat Departments at Ferozepore, Jullundur and Mooltan. In Kángra proper the value of the articles made annually amounts to Rs 7,500. The Dumnas, who are the chief workers in bamboo, practically supply the place of potters, weavers, carpenters and masons: grain is kept in large bamboo receptacles called peru; kiras (large mats) serve for every sort of enclosure, wall or ceiling. A list of articles made in Kángra will be found in Appendix II.

There are reserves of nirgal in Kángra, from which the canes are usually exported in an unmanufactured state. Locally they are not much used, as they cannot be had free, and because their use entails more labour and skill.

In Kulu the nirgal grows wild, and canes can be obtained throughout the year. They are generally 5 to 6 feet long, and rather less than an inch in diameter, and are cut just above the root. The chief articles made are baskets, of which there are a large variety: an account of this basket making is given in a later paragraph.

9. *Himalayan trees.*—The bhojpattar, or bark of the birch (*Betula bhojpatra*), is used in Kulu to form the covering of a rude kind of umbrella (*shtror*) used by the hillmen. It also serves a variety of purposes in a zamíndár's house and field work, such as covering rice seed when it is being steeped preparatory to sowing, wrapping round honey and ghi. It is exported to the plains also for wrapping round the flexible stems of huqqás: the foundation of the stem is a coil of iron wire, over which is wound the birch bark, and the whole is covered with cloth. The bark forms a natural paper, and is much used in Bushahr for writing charms on. In Láhoul the twigs are used for rope bridges. The tree grows in the higher ranges of the Himalayas at an altitude of 7,000 to 11,000 feet.

Of the *Daphne* two species are found in the Himalayas—the *D. Oleoides* and the *D. papyracea* (*Cannabina*), the latter being abundant on the Sutlej. In Nepaul and Kumáon a strong tough paper is made out of the inner fibrous bark, and it is said that this paper used to be made by the Ladákhís settled in Kulu and to be exported in large quantities to Ladákh, but this industry seems to have died out. In Bajji State a tough semi-transparent paper is made from the fibres of a plant called 'set barwa,' which is probably a *Daphne*, but it is now little used.

The *Grewia oppositifolia* and the *Grewia Asiatica*, the barks of which are known as dhaman (dhamman) or bihul and phálsa respectively are found at low altitudes, and the former is known also in the Salt Range and Sulimán Range. The tree is about 40 feet in height with a trunk of 3 or 4 feet girth. The trunk is soaked in water for 15 to 20 days, and the bark is then peeled off and beaten out. The fibres are twisted into string for churns and charpoys, but there is no trade in it. The rope made is peculiar to the hill country, and cannot be used in the plains, as exposure to the heat renders it quite unserviceable. The quality is inferior to sán rope.

The dhaman is used in Gurdáspur, Kángra, Pindi, and in the Native States of Náhan, Biláspur, Bushahr and others.

Of the *Bauhinia* family the Taur (*B. vahlii or racemosa*), a gigantic creeper, is very plentiful in Kángra, Biláspur, Mángal and Bajji, and is much used.

Ropes are made from it in two ways: either the real fibres (shel) of the branches are extracted and twisted into ropes, or they are taken without any preparation except splitting them up, and used as natural ropes. These being tough and durable are often used for fixing slates to the roofs of houses and tying on thatch, and are known as udála.

The leaves are greatly in demand for cups and dishes which are used on festive occasions, and it is said that between 300 and 400 Dusali families get a living in Kángra by manufacturing these. The kalyar, bark of the *Bauhinia variegata*, is used in Pindi chiefly for making slow matches and fuses. The tinder used by the mountain shepherds is made from the woolly growth found under the leaves of the *Oreoseris lanuginosa* (ganni). This substance has often been recommended as a material for cloth, but never seems to have been tried.

10. The bark of the dâk tree (*Butea frondosa*) is known as palás, paláh (Kángra), nasa (Karnál). Common up as far as the Jhelum, it ascends to a height of 3,000 feet, but it seems to be most abundant in the Delhi Division. In Karnál the fibres are used to make ropes and boras, and Kumhars in Hissár also work it up. In Delhi the Jhínwars make baskets of it, and a few Bakkáls make

pattals of the leaves by sewing them together with bamboo straw for use on festive occasions. The leaves are also largely in demand as wrappers for sweetmeats. The fibre is obtained by peeling the bark off the root and beating it out until it becomes sufficiently pliable and separated.

Of the *Cordia*, two species are found in the Punjab, the *C. Rothii* (gondi or gondni) and the *C. Myxa*, both in the Salt Range, and the latter (the bark of which is called lasúra) in the Siwáliks and Himalayas. It will grow anywhere when cultivated. Their use in fibrous manufactures is rare, but lasúra is occasionally used for ropes and fuses or for caulking boats.

There are two species of the mulberry family, the *Morus Alba* and the *Morus Indica* (túl). The former is cultivated in the Pesháwar valley and the plains; the latter is not uncommon in the sub-Himalayan tract. The fibre may perhaps be turned to account some day as an ingredient in paper pulp, but at present the only use to which the tree is put is basket making. The Sonepat tahsíl of Delhi district is somewhat noted for this.

11. *The Date Palm.*—Two kinds are known to the Punjab, the *Phœnix Silvestris* and the *Phœnix dactylyfora*. The latter is much the larger of the two, attaining a height of 100 feet, and may be always distinguished from the *Silvestris* by the dense mass of root suckers which surround it. The average height of the *Silvestris* is only 40 feet, and there are root suckers. The larger species is to be found all over the southern parts of the Punjab, in Mooltan, Muzaffargarh, Jhang and Dera Gházi Khan, while the *Silvestris* occurs in the Salt Range, the Siwáliks and the eastern plain districts.

The leaves are, from their shape, most suitable for plaiting into mats, fans and baskets, but they are generally found too tough to split up into individual fibres. In Karnál, however, the bheesties do beat up the leaves and twist the fibres into ropes for their own use: it is a very rotten rope and, unless kept constantly wet, is very apt to snap.

Palm leaf chatái fetches Rs. 6 per 100 square yards, and borias or sleeping mats made by the Jhínwars Rs. 2 each. The leaves take dye readily, and some ingenuity is displayed in the coloured designs for fans, especially in Delhi, where there is a large demand for them in the hot season. Imports of the leaves from Karnál and North-West Provinces are made to satisfy this demand.

The tree is scarce in Ferozepore, indigenous in the Dera and Hamírpur tahsíls of Kángra, and Pathánkot tahsíl of Gurdáspur district where the Changers and Domnas carry on some mat-making trade.

In the Hissár, Pindi, Jhelum, Gujrát and Gujránwála reports it is not mentioned as occurring. Along the border from Hazára to Kohát it is not used at all; it is found in Bannu in the Shamsi Hills, and Jhandee Khel, but it is not plentiful there. South of that again it is common.

In Mooltan the proprietor of the land on which the palms grow cuts off all the superfluous branches every year, and these are collected free by intending manufacturers. The branches are then dried for a few days, and the leaves torn off the stalk or cut with an iron 'dat.' Before being worked up they are soaked and cleaned. The stalk of the leaves is sometimes used for making chicks; they are cheaper than those made of bamboo, but not so durable.

The stalk with the tough leaves on is often used as a broom. From the kabál or reticulum of the central branch are made ropes and pack saddles for oxen.

The common articles made from the leaves are mats, fans, baskets, chhábis, well ropes and bán. The leaves are also used for thatching.

12. *Dwarf Palm.*—The home of the *Chamœrops Ritchiana* is in the Sulimán Range near the eastern skirts up to about 3,000 feet, but it is occasionally met with in the Salt Range and the Siwáliks (*e. g.*, in the north of the Umballa district). It is called 'patha' in Pesháwar and in the Punjab generally, 'mazri' in Bannu and Kohát, 'pish' in Biluchistán.

The chief districts in which it is produced are Kohát and Pesháwar, or, to speak more correctly, the hills adjoining their borders. In former time the

plant was common all over the Kohát district, but of late years, owing to the construction of the railway to Khushálgarh, there has been an increased export trade to Ráwalpindi and other Cis-Indus districts, resulting in a diminution of the supply in the more accessible parts of the district. It is now chiefly confined to the Samilzai tappa, Borakka and Sur Gul hills, Dhoda and Jarma Mairas of the Kohát tahsíl, and most of the Hangu tahsíl. In the Miranzai valley above Hangu the supply is very considerable, the country round being covered with it for miles, and it is too remote from the railway to have suffered much as yet. Measures for the preservation of the mazri are thus described: "Before 1882 every one, whether a resident or an outsider, apparently enjoyed a promiscuous right of cutting mazri, which the villagers could do very little to stop. In 1882 Mr. Tucker, then Deputy Commissioner, discussed the matter with the lambardárs, and the following rules were agreed to.

Mazri was not to be cut between April and September, inclusive, except by the resident villagers for their own immediate wants. During the rest of the year no mazri was to be cut less than 2 feet long. Outsiders were for the future not to cut mazri indiscriminately, but were to be restricted to tracts where it was abundant and could be cut without fear of permanently diminishing the supply. In villages where the plant had suffered from over-cutting, outsiders were to be excluded altogether. Outsiders cutting mazri within village boundaries were to pay annas 4 a bullock-load to the proprietors. The collection of these dues, which were to be credited to the village malba, lay with the lambardárs, the object being to give the people an interest in preservation." These rules had an excellent effect, and the spontaneous production has much increased of late years.

Sometimes the right to cut in any particular village is leased to a contractor, who realizes 8 annas per camel-load and 4 annas per bullock-load. Last year the lease of Jarma village sold for Rs. 1,000. There is a large import into Pesháwar both of mazri itself and also of manufactured articles from independent territory across the border. In Bannu the supply is chiefly obtained from the hills outside the district. Mazri grows on Sheik Budin and in the Tánk tahsíl, and the import from the Wazíri hills is valued at Rs. 5,000 a year.

The common articles made from it are chaplis (saplai), generally worn by the agricultural population on the border, waúr or bán for charpoys, well ropes, cattle ropes, trangar chatái, mats of various sorts, and baskets. Skull-caps are also made of it in Pesháwar.

The fibres are obtained by beating out the green leaves with a mallet, and they are then twisted into string and rope in the usual way.

TRADE.

13. *Workers; their condition and earnings.*—Owing to the fact that a large percentage of the agricultural population employ their spare time in manufacturing for their own immediate wants, and that few follow these occupations solely as a means of livelihood, any statistics regarding the numbers engaged are of little value. Those statistics which are given in the Appendix, as a rule refer only to the castes who do make for the market, but it must be remembered that they are agriculturists as well. As it is usually only the lowest of the agricultural classes that take to this kind of work to supplement their other earnings, it is natural to find them all poor; indeed, the average rate of wages earned could do no more than suffice for the maintenance of the family. The chief castes employed in the trade are as follows: in the Delhi Division, Jhínwars, Banjhárás, Meos, Kahárs; and in the Hill States, Banjhrás (a low Hindu caste) and Kohlís; in the Jullundur Division, the Dumnas, Raiens, Mahtams, Kumhárs, Labánás, Kahárs and Changars; towards Lahore, Bahrupias, Mahtams and Labánás. About Jhelum the Mussallis, a low caste, originally sweepers, are the chief workers; in Pesháwar, the Mohmands and Utman Khels; while down the frontier are the Kaneras, Kotanás, Mahtams and Labánás. Besides these, in every district the menial classes and village servants—such as the Chuhra, Kassab and Kumhár—are frequently employed in this kind of work. The criminal nomad tribes, like the Sánsís and others, often adopt these trades, partly as a means of livelihood and partly to make a show of a profession.

On an average, it may be said that the usual rate of wages is 2 annas to 4 annas a day; the bamboo and mazri industries are better paid, 5 to 6 annas a day being obtainable. Generally speaking, there is no fixed rate of wages, the remuneration depending on the quantity turned out; little skill or capital are required. Munj rope making is not paid highly, not more than 2 or 3 annas at the most, while chick-making and chatái-making are paid better. A demand for san in Lahore has increased the wages of san workers to 4 annas a day.

Profits are difficult to estimate where the manufactures are chiefly made for home use, or sold direct by the producer, and the estimated profits of the various districts differ so much that it is difficult to generalize from them. Those given seem generally to refer to the percentage on the cost of production realized by the maker on sale.

The profits made by the producer are undoubtedly a high percentage of the total cost of raw material, but they are in reality insignificant owing to the petty extent of the trade and the cheapness of the articles manufactured.

Where a man sells the articles he makes, he derives from 30 to 50 per cent. profit on his outlay in raw material; in the case of bamboo in Hoshiárpur it is put down at 150 per cent.

Munj workers generally make about 25 per cent. profit.

Where there is anything like a regular trade, such as there is in mazri, 12½ per cent. seems to be about the average rate of profit.

14. *Raw Material.*—It is impossible to give any estimate of the raw outturn for the whole Province, as in most of the district reports no attempt has been made at all to give any figures. Those given refer to the amount of material actually used, and not to the amount grown. Owing to the peculiarly scattered and domestic character of the trade, such estimates can only be approximate. The outturn of san is 3,000 maunds in Gurgáon, Rs. 13,275 worth in Hissár, Rs. 22,000 worth in Hoshiárpur, Rs. 10,000 in Lahore, Rs. 8,000 in Siálkot, and in Gurdáspur with sankokra 3,000 maunds. The price in every case is from 6 to 8 sérs a rupee, except in Siálkot, where it is 10 sérs; the price of sankokra is 10 to 15 sérs per rupee.

The outturn of munj is 6,000 maunds in Gurgáon, Rs. 10,000 worth in Delhi, Rs. 8,750 worth in Hissár, Rs. 15,000 in Hoshiárpur, Rs. 10,000 in Lahore, Rs. 10,000 in Siálkot, Rs. 4,860 in Muzuffargarh. The average price is 20 sérs a rupee, it being cheapest in Jullundur and Ferozepore, where the price is close on 30 sérs per rupee. Districts where the date palm outturn is mentioned are Gurgáon, 1,300 maunds; Delhi, Rs. 1,400; Hoshiárpur, Rs. 1,700; and Muzuffargarh, Rs. 500. The price varies from 30 to 40 sérs a rupee. Dried mazri is sold in Kohát at 1¼ maunds per rupee, and at Bannu at two maunds; fresh mazri fetches three maunds per rupee. Most of this is imported from across the border and the outturn of the districts themselves is only a small part of the amount worked up.

The outturn of bamboo in Hoshiárpur is Rs. 1,900, and the price is Rs. 3-2-0 per 100 canes; in this district is also to be noted Rs. 3,000 worth of flax and Rs. 2,000 worth of bagar sold at 48 sérs per rupee. The outturn of dib in Lahore is Rs. 1,000, and in Siálkot Rs. 5,000; its price varies from one to two maunds per rupee. Bhang is sold for 8 to 16 sérs per rupee, and the outturn in Kulu is estimated at Rs. 3,000.

The total value of the raw material annually worked up in the districts where the figures are given is as follows:—

	Rs.	
Hissár	22,486	
Umballa	18,065	
Jullundur	1,00,625	
Hoshiárpur	42,900	
Lahore	27,650	
Gujrát	10,650	
Siálkot	26,900	Of this, Rs. 11,100 are raw materials used in paper-making.
Gujránwála, perhaps	1,00,000	The estimate given is enormously exaggerated.

15. *Export and import of raw material.*—Except the trade in mazri from the North-West Frontier, which is no doubt steadily increasing, and which has extended as far as Lahore, there is not much regular import and export in raw material away from the larger cities, which, of course, create a constant demand. In other cases, if the local supply for the year be insufficient for the needs of the district, the supply of the neighbouring one is drawn on, and *vice versâ*. The Pesháwar 'patha' is mostly grown in the Khyber hills, and the import trade, which is valued at Rs. 20,000 yearly in manufactured articles and raw material, is a through trade to the districts of the Ráwalpindi Division. The raw export of mazri to Pindi, Jhelum and Shahpur from Kohát is Rs. 20,000 a year. It is imported in considerable quantities from Miránzai *viâ* Kálabágh by Paráchás (Muhammadan traders). Last year 6,385 maunds of mazri came into Bannu city, almost entirely from across the border, and Re. 1 a maund octroi duty is levied on it. From the Wazíri hills Rs. 3,000 worth is sent down to Dera Ismail Khan.

In the eastern districts munj is still the staple, and about 6,000 maunds are brought from Alwar, Nábha and Jeypore into the Punjab through Rewári; some of this is sent on to Delhi and some to Muttra. There is a surplus supply of munj in Lahore, and Rs. 5,000 worth is exported annually to Mooltan and Gujránwála. Hoshiárpur exports san annually to the value of Rs. 10,000, some to Gurdáspur, but most to Lahore, where there is a large demand for it. From Gurdáspur Rs. 2,000 worth of bamboo is exported to the plain districts, and there is a trade in Nirgal for huqqa stems from Náhan and Kumhársen.

The only other imports from outside the Punjab worthy of mention are san from Patiála and Jummu and munj from Baháwalpur.

16. *Trade in manufactured articles.*—The chief imports of manufactured articles into the Punjab consist of tát and gunny-bags from Bengal and Karáchi; paper from Lucknow and Calcutta; rope from the North-West Provinces, Ulwar and Jeypore; and mazri manufactures from across the North-West Frontier.

The value of imported articles from beyond the Punjab into the Umballa district is put at Rs. 13,730, which includes tát, gunny-bags, paper, fans, bán, and also munj and bhabar rope from the hills. Six thousand maunds of rope pass annually into Gurgáon from Nábha, Jeypore and Ulwar, but out of this 2,000 maunds are sent on to Agra and Muttra.

Lahore imports Rs. 1,000 worth of cocoanut rope, and 10,000 sacks, worth 4 annas each, annually from Calcutta, and paper from Lucknow. Dera Ismail Khan receives Rs. 1,000 worth of gunny-bags from Bengal and Rs. 2,000 worth from Karáchi, while Dera Gházi Khan receives Rs. 11,200 worth from Sukkur and Karáchi for the wheat trade. Gujránwála imports Rs. 17,000 worth of bán munj from the North-Western Provinces, and san string from Jammu. Manufactured articles consisting of mazri baskets, ropes, and matting, valued at Rs. 3,780, were imported from Tirah into the Kohát district during 1889-90, as registered at the foreign trade posts. From Kanigoram, ropes, mats and baskets are annually imported into Dera Ismáil Khan to the value of Rs. 7,000. From the hills of Náhan and Patiála there is some import in baskets.

Exports beyond the Punjab hardly exist; there is nothing worth mentioning except Rs. 1,000 of bán munj from Hissár to Patiála, and Rs. 1,500 of the same from Muzaffargarh to Sukkur, and some trade in rope from Gurgáon to Agra and Muttra.

Within the Province itself, the chief exporting districts are as follows:—Jullundur sends san and munj rope annually to Lahore, Amritsar and Ferozepore to the value of Rs. 6,850; Hoshiárpur supplies Jullundur with large quantities of munj and baggar rope; Gurdáspur exports tát patti (Rs. 10,000) and bamboo articles (Rs. 2,000) to the Lahore Division. San sutri and tát patti valued at Rs. 9,600 are exported from Gujrát to Jhelum, Shahpur and Pindi. The Pindi Division also receives wáur, matting and baskets valued at Rs. 6,500 from Pesháwar. The districts which receive the largest supply from other districts are Dera Gházi Khan, which imports chiefly gunny-bags and bán munj, value Rs. 9,574; Muzaffargarh, which receives Rs. 2,500 worth of bags from Lahore; Gujránwála, where the imports are Pesháwar mats and fans (Rs. 3,000), and san

sutri from Siálkot (Rs. 3,000); and Gurdáspur, which imports paper and bán munj valued at Rs. 4,600. All the details that have been given of the export and import trade will be found in the appendix.

LOCAL MANUFACTURES.

17. *Tát-making.*—Tát is practically the only fibrous fabric produced in the Province, and this is only made in districts where "san" is plentifully grown. The trade is of some importance in Hoshiárpur, where the total annual value of pieces of tát manufactured is Rs. 12,000, and of gunny-bags Rs. 500. These strips of tát are woven 10 yards by 1 foot 2 inches, and sell at Rs. 1-8-0 each. The method of manufacture is the same as that of cotton durries: a web of the requisite length and breadth is spread over a level space, fixed on long poles at either end; the woof is then interwoven in the usual way. Jagádhri and Búria in the Umballa district are somewhat noted for this industry, and the annual outturn of tát is put at Rs. 2,155; 110 Loheris are there employed, and they are said to be well off. In Hissár the 'san' fibre is woven into taprís,—oblong mats used by shopkeepers,—but the total value is only Rs. 200 per annum. Taprís to the amount of Rs. 1,078 are made annually in Jullundur, but the trade is not thriving. In Ludhiána 4,090 persons are employed. The tát is utilized for sacks, bags, floor-mats, packing purposes, and for sides to bullock-carts (pakhulís). The bags fetch Rs. 27 a hundred, and the price of tát varies from 2 annas to 7 annas a yard.

Tát is made in Kángra to a small extent, and in Gurdáspur it is used for large grain sacks (chut) by the Turk caste.

There is an import of grain-bags into Lahore from Calcutta, valued at Rs. 2,500 a year; and south of Lahore there appears to be little local production, the demand being supplied from Karáchi and by through trade from Lahore.

The Labánás of Gujrát earn 2 annas 6 pies a day at tát-making, and Rs. 1,600 worth is exported every year to districts round. In Jhelum the baniás make khurjís of it. Notwithstanding repeated experiments with fibres, it would appear that the difficulty of working them economically into textile fabric will be overcome, not in India, but in England, where some interest has already been excited. The Deputy Commissioner, Shahpur, writes: "With a view of finding out defective points of treatment and remedying them, a firm in High Street, Lambeth, had commenced to work upon them. Samples of fibre plants of every species can be submitted for a carefully supervised trial, and any defect in machinery or method of treatment be discovered and an attempt made to remedy it."

At present tát making does not form an important industry.

18. *Carpet and matting.*—The chief manufactures under this head are chatai of the date or dwarf palm, munj, and san matting (tát patti), and dib matting. Matting in use in houses is generally made of khajúr or mazri—the former in the eastern parts, and the latter in the north-western parts of the Punjab. Rupees 6 per 100 square yards is the average price of khajúr chatai, and about Rs. 8 is the rate paid in Pesháwar for chatai made of mazri.

In Karnál, strips for bedding, measuring 6 feet by 4 feet, called "boriás," or 'safs,'—price two annas each,—are extensively made and very popular. In Hoshiárpur the annual outturn in khajur mats is Rs. 3,250, and the price is ten annas per square yard. The price of date palm mats varies a great deal in different parts, but is generally between four annas and one rupee; it is cheapest of all in Mooltan, where eight annas to ten annas per 100 square feet is the average price. The process of manufacture is simple: the branches are cut and dried in the sun; the leaves are then separated, soaked in water, and subsequently cleaned with a curved knife (dát) and split down the middle to the base, where they are left joined. Several of these are then plaited in and out of each other until a strip 5 inches broad is formed, which can be extended to any length. A number of these strips are then joined together with leaves of the same material, and the mat is shaped as required.

In the Pesháwar Division and Bannu nothing but mazri mats are used, and in Gujránwála, Jhelum, Siálkot and Lahore they are gradually displacing other sorts of mats. The annual import of chatai into Lahore from Pesháwar already amounts to Rs. 5,000, and there is a large export from there to the Ráwalpindi Division generally. The superior strength of this matting renders it more popular, even though it is more expensive than most kinds.

From bán munj a carpet is made in Gurgáon something on the principle of the durri. The skeins of beaten-up fibre (lachchhás) are stretched round two rollers on the ground to form the warp (*tána*); the woof (*teri*) consists of a piece of bamboo about a yard long with niches at each end. A lachchha is wound on to the teri, and this is crossed and recrossed between the parallel strings of the warp, and these parallel sets of strings are crossed behind each strand of the woof (bhai bharna). This is done by means of two bamboos, which are hung horizontally over the web on a frame; from each of these bamboos a number of strings are suspended, which are fastened to the upper and lower layers of the woof respectively. By elevating and depressing these bamboos alternately, the upper and lower strings of the warp are made to cross after each strand of the woof has been inserted. The strings are then made compact by means of a comb with iron teeth. One man can make a square yard in a day. The Delhi Jail is famous for these carpets, and they have also been made in the Lahore Jail. They have been from there exported to England, and the trade could be made a profitable one if more labour was employed. They can be worked on a loom to any pattern, and the fibres are easily dyed. Munj and san string can also be made into door-mats of any pattern, and most jails can supply them to order. When san sutri is employed instead of munj, the matting is known as tát patti. In Hoshiárpur Rs. 3,200 worth of munj matting is made annually and sold at five annas per square yard. San and sankokra are used in Ferozepore, tufts of coloured fibres being sometimes left on the mats in imitation of Persian carpets. A mat, called "mandri," is made in Kulu of rice straw or grass, plaited on a framework of string. In Hazára, too, a round mat, 18 inches across, called 'phindi,' is made of the same material and sold for two to four annas. In many districts the dib (bulrush) is a good deal used. These mats are also made something like a darri. A long pole of the required width is perforated with holes about an inch apart, through which strings of munj are passed and stretched tight to form the web. The rushes, which have been moistened and beaten first to make them pliable and flat, are then twined over and under the strings of the web, and beaten into their places with wooden pegs. As the work progresses the beam is moved further on. The sides are finished off by collecting the long ends into bunches and twining one under the other to form a sort of plait-work; the ends of the mat are secured by sewing these with long stitches of double munj string. The matting is firm, durable, and elastic, but is not equal to that made of dwarf palm. Pachai, the crushed stalk of the sugar-cane, the dihla rush and the dab (*Poa cynosuroides*) are used in a few places, but not to any great extent. In Dera Gházi Khan the coarse, flat shoots of the *Saccharum sara* are made into a thick matting called 'truha.' These mats are generally used as a substitute for thatch; their thickness renders them unsuitable for use in bungalows.

In Dera Ismail Khan dib is not used for floor-mats, but only for bindis, *i. e.*, mats to protect the dates from the attacks of birds. Such mats are sold at Rs. 2-8-0 a hundred.

19. *Rope-making.*—The following fibres are employed in the Punjab for making ropes and string: bagar, bhabar, dib, dab, munj, kanh, pachai, straw, grasses in Shahpur district known as chujan, kai and pataka; alsi, agave, bhang, san, sankokra, khip, madar, nettle, birch, root of the dhak tree, bihul, gondi, lasúra, khajúr, mazri, taur, tumba-ki-bel, and thuh kawár gandal. Of these the munj is the most commonly employed among the agricultural classes, as ropes made of this fibre stand strain and moisture well; they are consequently most suitable for well ropes, track ropes and boat cables. Bán munj, too, is used universally by the lower classes for stringing charpoys, except in places where it is not easily obtained.

San and sankokra ropes are also used for the same purposes, but more especially for charpoys, cattle muzzles, and trangars. Khajúr rope is of poor

quality and does not stand rough work. Madar ropes are used in the Sirsa tahsíl by the Bagar Jats, and answer well for agricultural purposes. The kánh is little used for ropes, as it is not strong. Bhang is largely used for ropes in Kángra; the names of the principal ones are rassi, jewri, joch, kachhu, and dáwn. In Siálkot pachai is used for well ropes, and the villagers generally keep one or two sugar-presses working to supply them with crushed canes for this purpose. Mazri furnishes good material for every sort of rope, but some care has to be exercised in the twisting, as an excessive twist is injurious and only weakens the rope.

The rates at which the various kinds of rope and string are sold seem to vary a good deal, but this difference in price is very often due to the quality of the rope made. Ban munj of the best sort sells on an average at 5 to 8 sérs a rupee; the inferior sorts fetch 16 or 20 sérs a rupee; a máhal or well rope of munj costs Re. 1 to Rs. 1-8-0; other munj ropes sell at 13 or 14 sérs a rupee. Madar ropes cost 3 or 3½ sérs a rupee, but they are rarely sold. The average price of san bán is 4 to 6 sérs a rupee, of mazri waur 8 to 20 sérs, of bhabar bán 16 to 32 sérs, of bihul sutri 8 sérs. A máhal of mazri costs annas 8 and of pachi 1 rupee.

The methods of twisting rope vary little throughout the Province. The fibres of the various plants have been prepared as previously described, and among the zamíndárs themselves the actual rope-making is done in the slack season. The common method of making san ropes is as follows. The fibre when peeled off is put into large skeins (lundhís), and these are first twisted by hand into strands (lar) 50 to 70 yards long. These strands are tightened and shortened to the required length with a 'charkhi' or 'ainthni' which is attached to one end, while the other is made fast to a tree. Two or three of these strands are then twisted together to make máhals and thick ropes. The fibres when ready for use are known as 'wadhar.' In making bán, a dhera (dherna) or bobbin is sometimes used for the first twisting, and a strand so made is called a dhári (weight about a sér). Two dhárís are then twisted with the dhera into bán. The bán is steeped, beaten out, cleaned with a piece of blanket or felt and rolled into a ball (pinda or lari); 1¼ sérs is an average day's work for one man. Bazaar rope, such as that made by the Lodhás of Karnál for the market, is inferior in strength and quality to that made by the villager for his own use. The Lodhás use regular spinning-wheels similar to cotton-wheels, and turn out a lot of rope of every size, which they sell at about Rs. 1-14-0 a maund.

The method of making munj rope is as follows. The fibres when prepared are placed in heaps, and the rope-maker picks up as much as he can hold between his finger and thumb (called 'dhain'). He then proceeds to twist two of these 'dhain' together with his fingers, after first moistening them; the string as it is made is kept tight under a stone or round the foot: when the first two dhains are finished, two more are added and twisted in, and so on till a long, loose string is made. This is tightened up with the aterwa or spinning-wheel, and wound on to a stick or strung up between two trees to dry. It then becomes set and retains the twist. Any loose bits of fibre are cleaned off with a small stick called 'salai,' and the bán is ready for use. To form a rope, two or three strands are twisted together and tightened with a charkhi, and three men are generally employed on the business. In Lahore the munj is twisted into a rough rope called 'tandúli' for drying purposes, which is bleached and then sold as it is. In twisting san rope the long strand is folded into three or four lengths, which are not cut, but are twisted together as they are.

There are five factories in Delhi for making bán, principally of munj brought from the Rewári and san grown locally; they are open all the year round and their gross outturn is two maunds a day.

Two forms of wheels for twisting fibres are in use in Lahore, called 'vatna' and 'deva'; the principle of both is the same, and is like that of the 'bhirni' of Dera Ismail Khan: the fibres are fastened at one end to the several arms of a wooden framework, to which a circular motion is imparted by one man; a second man supplies fresh fibre when the first is all twisted up. By the use of these machines the outturn can be increased four-fold, and the twine is more evenly twisted and firmer. Its inferior strength is the cause of the superior

popularity of hand-made rope, but no remedy has at present been suggested for this defect. In Montgomery the twisting is done with a dhairni, a board perforated with holes worked in the same way as the others.

Another form of the charkh is a wooden circular bit of board with holes in it: rough bits of stick are passed through them, the knot on the stick preventing them from slipping out; the fibres or the strands are attached to these bits of stick, and the board is fixed between two uprights and made to revolve, a grooved piece of wood (kalbut) being inserted between the charkh and the other ends of the fibres to secure a uniform twist. The instrument is generally used by the rassibat for the larger ropes.

20. *Basket-making.*—In the districts of the Delhi Division baskets are made out of the date palm, dhak, tamarisk, mulberry, and munj. In Ferozepore the making of the straw baskets has been recently introduced among women especially, but the trade has not made any progress as yet. In all the northern districts bamboo is used almost entirely; in Jullundur the annual outturn of bamboo baskets is Rs. 325, and Rs. 400 worth are imported from Hoshiárpur. In Kángra bamboo 'changers' (flat baskets for household use), price 1 to 4 annas each, are made to the value of Rs. 2,000, of which Rs. 1,500 worth are exported to the plains. Oblong travelling-baskets and waste-paper baskets are valued at Rs. 1,550, the prices of the former ranging from 8 to 2 annas, and of the latter 1 to 2 annas. The names of some of the other Kángra baskets are chhikku, char (a basket with low sides), karandi (flower basket), to which may be added from the Simla Hill States the chábre (flat like a tray), boye (shaped like a cup), petása (a deep square basket).

In Kulu a large variety of baskets are made from the nirgal chiefly by Bakas, two or three of whom generally work together. On commencing operations each basket-maker takes a supply of canes; one slits his into long fine strands (*tuli*), and another strips his into long thin ribbons or bands (*pátar*). The bark is first carefully peeled off and thrown away, except in fancy work, when half the tulís are cut with the dark-green bark adhering to them. A third basket-maker supplies himself with a branch or two of bhashil or other flexible wood, which he slits into long, flat, thickish bands (dahe), to make the framework of the basket. There seems to be no limit to the number or degree of fineness of the tulís, but ordinarily 22 strands are used for the smaller and 6 for the larger kinds of baskets. The knife used is shaped like a reaping-hook, but is not quite so crooked. The operator cuts towards himself, and to guard his left hand he holds between the forefinger and thumb of that hand a small piece of cane called 'lishnu.' The foundation of the basket is formed by placing a number of dahes across one another in the form of a star. To make a broad-bottomed basket, one foot in diameter at the base, 6 pairs of dahes are so arranged: for a kilta a start is made with 4 pairs only, but as the kilta widens out 6 more have to be added.

When the foundation has thus been laid, two 'pátars' are wound tightly round the centre of the star below and above each alternate 'dahe.' The tulis or strands are then similarly twined round through the dahes in pairs, one tuli being passed over the dahe which the other tuli has passed under, unlike the pátars, which are kept together. This process is called 'er karna.' When enough ribbons and strands have been twined through the dahes to make a sufficiently wide bottom, the dahes are bent perpendicularly upwards, and the ribbons and strands twined through them as before, with this difference, that two pairs of tulís are twined at the same time. When the basket is completed up to the rim, thin wedges (*páchéun*) of wood are shoved up through the rows of tulís all round the sides to give the basket firmness, and the top is secured by bands of pátars tied round it at intervals. The better baskets are lined inside with a matting of pátars called 'dol,' which is kept in its place by a strand passing under the rim outside (*rila*).

The names of a few of the chief baskets are kilta, chhabu (small round shape), chhabi, bharlu, dundku (large-bellied basket for grain), cháthi, bhungi, patár (covered with leather), chhar, and badaite (a bullock muzzle). The profits of the Kulu basket-makers are put down at 25 to 50 per cent.

The office baskets in Lahore are chiefly made from withies imported from Benares at Rs. 20 a maund.

The chhabi, a round cylindrical basket for holding bread, is in general use; in Jhang it is made of date-palm leaves on a foundation of munj reed. In Hissár the Heris make large baskets (kháris) from 'kana' bound with a strip of camel-hide leather. In the larger towns bamboo is always obtainable; along the rivers the pliant branches of the jhau or pilchi are the most used by the agriculturists, such baskets fetching Rs. 3 a hundred. In Hazára some ingenuity is displayed in the manufacture of wheat-straw baskets. These are of two kinds 'mandhas' and 'parotas,' the former cylindrical and narrow at the base, the latter with straight sides; both are often worked in coloured designs and cost from Re. 0-4-0 to Re. 1.

Palm and dwarf palm are used wherever they grow. Excellent baskets of all kinds are made from the mazri. Those in Kohát are constructed of a series of rings fitting closely to each other, and woven round with a very narrow strip of mazri. The principal names are kashrai, chakor (a flat basket like a dish known as 'dal' Cis-Indus), kurumo (a round receptacle for cotton), kandurai (like a barrel, used for clothes), pandorai (for gram), phandi or thala, a round stool. The average prices of these vary from Re. 0-4-0 to 6 pies, and some of the largest cost Re. 1. It is estimated that Rs. 2,700 worth of baskets are imported ready made from across the Kohát border, and Rs. 1,500 worth of these are exported to other districts.

In Bannu and the Deraját these baskets are generally used, but there is not much export. Dib baskets are extensively used by fruit and sweetmeat sellers for their wares in Dera Ismail Khan, and they take the place of the pilchi basket down country.

21. *Chick-making.*—Two sorts of chicks are commonly made, the fine window chicks painted green and edged with cloth, and the stout reed ones for the verandahs. Their manufacture affords occupation to a few persons in cantonments and large cities. The large chicks are made either of split bamboo, or of the reeds of the *Saccharum sara* tied together with san string, and the small ones generally of bamboo split fine and tied with cotton thread. Both kinds are made in the same way; a number of threads are hung over a horizontal bamboo, $2\frac{1}{2}$ inches apart for small chicks and 10 inches apart for large ones. These threads hang down in even lengths and are weighted at the end with pieces of brick; the reed or bamboo slip is then placed along the horizontal bamboo and the threads crossed underneath; this process is repeated until the required length of chick is obtained, and the threads are then tied.

In Mooltan, Dera Gházi Khan, and Dera Ismail Khan, the stalk of the date-palm leaf is sometimes used for making small chicks. They are cheaper than bamboo ones, but not so durable; they are sold at Rs. 5 per 100 square feet, and the wages of the workers (Chuhras and Purbias) are two annas a day. Bamboo-chick makers earn five annas or six annas a day; the price of bamboo chicks is 12 annas to Rs. 1-8-0, according to size, and that of reed chicks two annas to eight annas.

In Dera Gházi Khan the large screen made of kana by the villagers is called 'a pattal'; they are much used for temporary dwellings within reach of the river flood, and their outturn is estimated at Rs. 2,100, the wages earned being three annas to five annas a day.

22. *Nets.*—A variety of nets are made for domestic uses from the string of the san, sankokra, munj, and dwarf palm. The chhinka, which is much used in the eastern districts, is generally a net suspended from the roof as a receptacle for clothes, food, &c. In Karnál the term is applied to the cattle muzzle used at the threshing-floor. They are sold at 6 pies each.

The most common form of net is the trangar (also known as jáli or tangar), which is used chiefly for carrying loads of bhoosa or forage; they vary in price from three annas to Re. 1, according to the animal they are required for; three men can make one in a day. In Kohát the annual outturn of trangar made of mazri is valued at Rs. 2,000, the price there being one anna or

one anna and six pies per pair. A trangar-maker can earn three annas and six pies to five annas a day. A good profit is made in some jails by the manufacture of money-bags from san twine, which are sold for use in Government treasuries at 16 per rupee.

San twine is also used for fishing and tennis nets. Fishing nets are made by the Kahars in Kángra from the ahan (Himalayan nettle), and bhang is used in Kulu for the same purpose. The fishing-nets of the Indus Mohanas made of madar fibre have been mentioned before.

23. *Hill Shoes.*—The use of grass shoes in the hills is universal, and their manufacture deserves some notice. In Kulu, shoes are made from bhang and are called 'pula.' To form the sole the fibre is worked into thick strings, which are compactly woven together; for the upper part a fine twine is made from the fibre, which is carefully knitted by hand with a needle. A pair of shoes ornamented with coloured string and goat's hair thread fetch as much as 4 annas; plain, they sell at 2 annas a pair. Hemp shoes last longer than shoes made of grass such as 'bagar,' and are more generally worn, though they are said to be less safe in difficult places. Sometimes nettle fibre is used for the sole. Rice straw is used in Hazára, but such shoes wear very quickly and only last four or five days.

Along the north-west frontier dwarf palm is the material used for the sandal (chapli or saplai). Afridis, Mohmands, Swatis and Bonerwals all wear them. The cellular portion of the leaves is first removed by beating, and for twisting the fibres an instrument called a speta is used, a curved and pointed piece of iron with a toothed edge. If sold the price is 3 pies per pair, but each individual generally makes his own. Superior ones worked with silk are made for women,—price 4 annas a pair,—and Hindús occasionally use these when going on pilgrimages, when leather shoes are forbidden. The annual outturn of mazri shoes in Kohát is Rs. 20,000.

24. *Fans.*—The manufacture of fans from the date palm or the dwarf palm is universal, and where the palm does not grow there is generally an import of raw material; there is, however, an increasing export in ready-made fans from Peshawar to districts north of Lahore. They are made largely in Rohtak and Karnál and exported. In Delhi the Kassab caste are the chief workers. There are two factories—one at the Turkoman Gate, and the other at Pahari Dhiraj—which are open during the hot season for four months. The total outturn of the factories is Rs. 1,400 a year, and the wages earned are one anna to 4 annas a day. All fans are hand-made, and the process is very simple; the palm leaf is soaked in water for a short time, then some of the leaflets at either end of the stalk are removed and plaited with those remaining on the stem. The fans are often coloured in neat designs; their price ranges from 6 pies to about 4 annas. Large ones made of mazri in Bannu fetch 8 annas. A man can make about twelve small fans in a day, which he can sell for 5 annas; his material will cost him 2 annas and 6 pies, and his wages are therefore 2 annas and 6 pies.

25. The morha or mondha, generally a circular stool, but sometimes made with a back, is a common article of furniture in a native house. It is made of kana and bán munj. The reeds are first cut into even lengths, and two are tied crosswise in the middle, and by tying more on to these two rows are formed, which slope in opposite ways, and which are fastened throughout at the middle; thus a cylinder is made, strong enough to bear considerable weight. The two ends of the cylinder are fastened into rings of straw, and the seat is added by weaving bán across from side to side in the fashion of a durri. A man can make one plain morha—price 4 annas—in a day, and his raw material will cost him 2 annas and 6 pies. The chairs cost 8 annas each and take two days to make. In Gurdáspur bamboo is sometimes used instead of kana, and the price is doubled. The Labanas on the Indus who make these morhas are easily taught to vary their designs, and can turn out arm-chairs and sofas very cheaply, if a little trouble be taken to show them what is wanted.

Sirkis are made from the tapering stalk of the munj; the flowery tops are placed side by side and are kept in their places by a binding of grass edging, or with bán. They are used like a pent-house, over a bamboo, to cover

carts, or as thatch, the strips being placed one over the other. The price is from 4 to 8 annas a pair; one man can make three small ones in a day, and clear about 2 annas and 6 pies on his day's work. Large fine brushes are made from munj, and are used by paper-makers and weavers; sweepers' brooms are generally made of jhau or bagar grass. Brushes of khajur leaves are made in Gujránwála and sold at about 6 pies each.

PAPER.

26. The manufacture of paper in the Punjab is now confined almost entirely to jails, and those outside industries which are still left have gradually declined through inability to compete with the jail-made or mill-made article. As might have been expected, the establishment of paper-mills at Calcutta, Lucknow, Gwalior and other places is everywhere rapidly displacing the old native manufacture: for instance, at Muthra, which is one of the great centres of the supply of native paper, the former local manufacturers now obtain their paper ready made from the mills in an unsized state, which they size and polish and sell as native paper. Dr. Dickson, of the Central Jail, Lahore, expresses his opinion that the manufacture of paper at Siálkot, and even in the jails themselves, will have eventually to be discontinued, and that even now it would be more advantageous to follow the example of the native traders at Muthra.

27. *Sialkot.*—The paper trade of Siálkot, which in the Sikh times and during the earlier years of the British administration was in a very flourishing condition, giving employment to thousands and working about 1,200 jandárs, is now languishing. The only places where paper is now made in the district are the villages of Rangpura, Nekapura, and Heranpura, situated on Aik nadi, near Siálkot itself. The introduction of paper manufacture into jails for use in Government offices was of course the first blow. This was followed by the establishment of the large paper mills and the manufacture of a cheap paper known as 'henai,' which dates from six or seven years ago. There are now only 117 jandárs at work, and there is no possibility of the trade recovering; numbers of the original paper-makers (Kághzis) have taken to other trades and professions.

The wages in the Siálkot trade are thus given:—

	As.	P.	
The Sathi (who works the jandár)	2	6	a day.
The Toyka (who cuts up the raw materials)	3	0	„
The Kadhaya (who lifts the pulp from the vats on the nir)	3	0	„
The Lávaya (who pastes the sheets on the wali) ...	2	6	„
The Ghotaya kachha (who gives the paper the first rubbing)	3	0	„
The Ghotaya pukka (who gives the final polish) ...	4	0	„
The Vadhaya (who trims the sheets)	4	0	„
Jháwán karnewala (cleaner)	1	0	„
Maya laganewala (starcher)	1	0	„

The total cost (including all wages) of converting a maund of old tát into paper pulp is Rs. 5-14-0, Rs. 7-15-0, Rs. 9-14-0, and Rs. 12-10-0, according to the quality, the difference being chiefly in the bleaching, washing, and polishing. A maund of prepared pulp will produce—

2 reams (gadis) of paper of first quality,
2½ reams of second quality,
3 reams of third quality,
4 reams of fourth quality.

The prices per ream are respectively Rs. 11, Rs. 7, Rs. 4-8-0, and Rs. 2-8-0. The profit realized is therefore for paper of 1st quality Rs. 4-11-0, second quality Rs. 3, third quality Rs. 1-14-0, and fourth quality Rs. 1-1-0. Very little paper of the first and second qualities is manufactured, the demand being chiefly for the cheaper kinds.

Each jandár works up 20 maunds of pulp in the year,—an average of 60 gadis,—worth about Rs. 270, taking Rs. 4-8-0 per ream to be the average price. After deducting the cost of production, Rs 150 (calculated at Rs. 2-8-0 per ream), the profit per jandár amounts to Rs. 120 per annum. The net earnings of the 117 jandárs are therefore about Rs. 14,000.

Paper is manufactured during the winter months, and the summer is taken up with collecting materials and preparing the pulp. It is said that the heat in

summer is too powerful for paper-making; it causes the paper to dry too rapidly, and the latter in consequence becomes liable to shrink and drop off the wall. There is also the chance of its being spoilt by one of the numerous dust-storms.

The value of the annual export in paper is put down at Rs. 20,000, and the districts which receive most of this are Amritsar, Umballa, Jhang, Mooltan, Gujrát, Jhelum, Pindi, and Peshawar.

28. *Delhi.*—There are two factories for making kachha paper (for parcels) in Delhi, one at Kadam Sharíf, and the other in the garden of Juras. The work is only carried on for six months in the year, being discontinued during the summer and winter rains. The proceeds realized from the sale are about Rs. 300 per annum. Stiff paper is also made in the city from waste paper and tát, and about 300 gadís a month are turned out—price Rs. 7 a gadi.

Country paper to the amount of Rs. 6,000 a year is manufactured in Lahore, but no details have been given about it.

29. *Mooltan.*—The only other paper manufactory, or at any rate the only one worth mentioning, which still exists is that at Jalálpur Pírwála, a town in the Lodhrán Tahsíl of the Mooltan district. The industry was once extensive, but, like all the others, has declined of late years, and there are now only seven shops left, the income of each of which is estimated at Rs. 120 a year. The workers are all Mussalmán Khojas. This paper was formerly largely used in Government offices, and was also exported to Baháwalpur State. Export trade to the latter place and to Dera Ismail Khan still continues, but in a very much reduced quantity. The chief use to which the paper is now put is for bannias' bahís. It is finer, smoother, and lighter in colour than most jail paper, and is certainly superior to the jail-made article now in use in Government offices: this superiority is due to the fact that a certain quantity of flax is mixed with the other ingredients, and that a larger proportion of waste paper pulp is used. The price is five and three annas a quire, according to the quality. In Mooltan city a very coarse paper is made by some twenty Khojas, but it is totally unfit for anything but packing purposes.

30. *Bajji.*—Paper of a very fine quality is made in the Hill State of Bajji from the fibre of a plant locally known as 'Set barwa,' one of the *Daphne* tribe. It is decidedly tough, and shows that the fibre from which it is made is eminently suited for the manufacture of a stout paper. The method of manufacture is as follows: The fibre is beaten to a pulp, which is washed, then thrown into moulds and dried. The paper is sized with rice-water, which enables it to bear a slight glaze. It is little used.

31. *Jail Paper.*—It would be superfluous in this report to describe the method of paper-making as practised in our jails, since a full account of it has already been published in Dr. Gray's note, and also in Baden-Powell's "Manufactures." The method is primitive and capable of little improvement, and the paper turned out will no doubt eventually be abandoned in favour of mill-made paper, which is cheaper and better. The chief use of the present system is of course to afford hard labour to a number of prisoners, which is at once suitable and remunerative.

The materials used vary little—old tát patti, gunny-bags, san rope, rags, and waste paper are the staples, and a large supply of these can be obtained without difficulty. Gunny-bags and grain-sacks can be got for Re. 1 a maund, and waste paper for Rs. 1-12-0. In Ferozepore Jail, in the operation of turning out three reams, the labour of 67 men is employed, as follows:—

Cutting up a maund of tát	1 man.
First and second poundings and washing	6 men.
Pounding with lime	6 „
Third washing and pounding	6 „
Fourth ditto	3 „
Sorting 1½ maunds of waste paper	2 „
Pounding paper	6 „
Washing	3 „
Paper-makers at the vat	6 „
Pasting	3 „
Sizing	6 „
Polishing	18 „
Cutting	2 „

In Mooltan an average of 135 men are daily employed; in Jhang 75. The paper sold is of two qualities,—price Rs. 8-10-0 and Rs. 5-12-0 respectively,—but the sale of the more expensive kind is comparatively small. In Gujrát Jail the cost of production is given as follows, per ream:—

A quality	Rs.	2	0	0 raw material.
	„	2	5	0 labour of 16 prisoners.
B quality	„	1	8	6 raw material.
	„	1	5	6 labour of prisoners.

In Rohtak Jail 103 maunds (value Rs. 1,934) is the average annual outturn; in Hissár 300 reams, value Rs. 1,725. In Mooltan 457 reams are sold annually for Rs. 4,220, of which Rs. 2,291 was actually expended on raw material, leaving a balance to the Jail of Rs. 1,929.

In Gurdáspur, paper worth Rs. 3,244 was sold last year; in Dharmsála, 213 reams, worth Rs. 1,352; in Gujránwála, 480 reams; in Dera Ismail Khan, 560 reams.

The figures for 1889 in Siálkot Jail are—

Price of outturn	Rs.	4,592-14-0.
Raw material	„	2,962-5-0.
Jail profit	„	1,630-9-0.

In Pesháwar 529 reams were sold with a profit to the jail of Rs. 1,805. No statistics have been furnished from other jails.

32. The component parts of the pulp differ considerably in their proportions. Two-thirds paper pulp to one-third tát pulp seem to be the most common, but equal parts of both are recommended in some jails. The larger the proportion of tát, the tougher will be the paper: if waste paper alone is used, the paper can be made sooner and more readily; but as it is not very durable, it cannot be used for permanent records.

In Mooltan the waste-paper pulp is mixed with flax pulp in the proportion of one-fourth to three-fourths; this renders the paper rather finer and smoother, and it is said that it would fetch a higher price in open market than that at present given by Government. The rates fixed, however, cover the diet expenses of the prisoners employed.

Two improvements are suggested by the Superintendent of the Gurdáspur Jail—better pounding and better washing arrangements. There is said to be a considerable advantage gained if the washing can be carried out in a running stream where the water is constantly replaced and remains comparatively pure. Running water, too, is always softer than well water, and, as such, is better adapted to paper-making. Canal water is nearly as good, and it is possible to combine pulp-washing with garden irrigation, as the water is not injuriously affected by the former process.

The use of wood ashes and lime in place of sajji and lime has also been recommended as more economical. The putrefactive process by which the compound of pounded tát sajji and lime is exposed to the sun's rays for several months in order to decompose the 'san' fibres seems on the whole to be more effective than the boiling process,—*i. e.*, when the same compound is boiled for 24 hours,—although, of course, by the latter method the time required for making the paper is considerably shortened. Paper is usually dyed with analine dyes, but a yellow colour can also be extracted for this purpose from Fuller's earth, turmeric, kesú (the flower of the *Butea frondosa*), and narsinga (*Myctanthes arbortristis*). The dye is mixed with the pulp in the vat.

33. *Experiments with other fibres.*—Experiments have been made by the Superintendents of the Gurdáspur and Shahpur Jails with the madar fibre: the paper turned out is tough and smooth, and is quite as good as the ordinary paper made with tát, but the difficulty of collecting it in large quantities, drying, storing, and decorticating preclude anything like independent experiments with it on a large scale in any single jail. Munj fibres have been tried in the Jhang Jail, but the paper turned out seems to be inferior to that made with tát. The fibres are beaten out and treated with sajji and lime in the usual way by the

boiling process. The paper has a yellow tinge, and its price must vary with the local supply of munj.

The rhea plant which grows in Kángra has been tried, but the experiment was not successful owing to the difficulty of removing the outer layer of the bark.

Attempts have been made in the Pesháwar Jail to replace tát with rice straw and lukh (*Typha*——). Either, when combined with waste paper, gives a fairly good result, but the rice straw is the best. The paper has a smooth surface, and has given satisfaction on trial in the district offices, and arrangements have been made for supplying a larger quantity, for there is a considerable saving in the cost of labour and material.

This appears to be the only case where experiment with other fibres in paper-making have led to any practical results; munj, madar, palm leaves, the dhak, the aloe, and the daphne, have all been tried, and although in many cases good samples were obtained, the absence of modern machinery has always prevented their permanent adoption.

34. *Appendices.*—Appendix I contains a list of the fibrous products of the Province which are generally or locally used or worked up by the people. The list is not exhaustive, and merely deals with those fibres which are turned to some account.

In Appendix II will be found the statistics of the different industries so far as they have been given in the reports. The details of import and export are probably fairly correct, but the estimates of the outturn and the number of persons engaged are quite unreliable. I refer more especially to districts like Gujránwála, where the numbers given are very large. It would be equally incorrect to say that such a large percentage of the population were exclusively engaged in rope making, &c., or to say that a larger percentage never made a rope in their lives.

Appendix III contains a list of the names of occupations tabulated according to Census Table XII-A (Census Report of 1881, Vol. II). The original table has been incorporated with it.

H. W. GEE, *B. C. S.*

APPENDIX No. I.

LIST OF FIBROUS PRODUCTS IN USE IN THE PUNJAB.

CLASS I.—GRASSES AND RUSHES.

BAGAR ... ... (*Eriophorum comosum or cannabinum*). Bagar or babbar. Found in the Siwáliks and Salt Range. Used in Kángra.

BHABAR ... ... (*Androphogon involutus*). Also called baggar or bhabbar, but more used than the first grass. Found in the Siwáliks, Salt Range, and sometimes in the plains.

CHUJAN ... ... A grass found in Shahpur.

DAB ... ... (*Poa (or Eragrostis) cynosuroides*). Dab, dib or kusha. Common throughout the Punjab plains.

DÁB ... ... (*Anatherium muricatum*). Panni, khavi, roots khas. Grows locally in the Punjab. Not found within 80 miles north of Mooltan.

DIB ... ... (*Typha angustifolia*). Kundr, Dera Gházi Khan; kunder, Bannu; era, Gurdáspur; lukh, Trans-Indus; the Bulrush. Common in marshy ground throughout the plains, and up to 4,000 feet.

DIHLA ... ... One of the Cyperaceœ. A rush. Jullundur.

DUB ... ... (*Cynodon dactylum*) Kabbal.

KAI ... ... A kind of grass. Shahpur.

MUNJ ... ... *Four species.* *Saccharum munja or ciliare (munj or sarut).*

Saccharum sara; the sarkanda or kana, a large reed.

Saccharum spontaneum; kanh or kharsana. Smaller than the munj.

Saccharum procerum. Rare in the Punjab; mentioned as occuring in Gurdáspur.

The first three species are common throughout the Punjab.

PACHAI ... ... (*Saccharum officinarum*). The crushed stalks of the sugar-cane.

PATAKA ... ... A grass. Shahpur. Used for ropes.

SASHOK ... ... A grass used in Kulu for shoes.

SIL ... ... (*Imperata Kœnigii*). A grass found in many parts of the plains.

STRAW ... ... Rice straw, *parali. Oryza sativa. Wheat straw. Triticum æstivum.* Used for hill shoes and ropes.

CLASS II.—PLANTS.

ALSI ... ... *Linum usitatissimum.* Flax. Not uncommon as a field crop, except along the N. W. Frontier.

AGAVE ... ... *Agave Americana and A Cantala.*

Both species are common in many parts of the plains, and are often grown in hedges.

BHANG ... ... *Cannabis sativa (Cannabis Indica).* Gánja. The true hemp. Common in waste places in many parts of the plains, and largely cultivated for its intoxicating properties; especially abundant and large in the Himalayas, where it grows up to an altitude of 10,000 feet.

DAPHNE ... ... *Daphne papyracea or cannabina.* Niggi, 'set barwa.' Occurs near the sources of the Rávi and Indus. Once used by Ladákhís for paper making.

KHIP ... ... *Crotolarea burhea.* A variety of san, used for rope in places where the latter is not much grown; *e. g.*, Jang, Shahpur and Dera Gházi Khan.

MADAR ... ... *Calotropis procera or Hamiltonii. Calotropis gigantea.* Ak, Ankalá. Common throughout the plains, and up to 3,500 feet Trans-Indus. The larger variety occurs in the Southern districts and in Montgomery.

NETTLE ... ... *Urtica Heterophylla* } Ahan, Jarahan, Káral (in Suraj).
U. reticulata } Bichu. Kárla (Hill States).
The Himalayan nettle. A tall plant with large leaves, growing in the Himalayas up to 7,000 feet; utilized in Kángra and Kulu.

SAN ... ... *Crotolaria Juncea.* Sanni. Indian hemp. Common in the plains, except in the extreme north-west; affects a dry soil. Generally cultivated round other crops.

SANKOKRA ... ... *Hibiscus cannabinus.* Patsan. Not so common as san, but occurs in the same areas as that plant. Like san, it is grown as a hedge round other crops.

THUH KAWAR GANDAL... *One of the Opuntiæ tribe.* Hedge cactus, Kángra.

CLASS III.—TREES.

BAMBOO ... ... Four species. *Bambusa arundinacea.* Magar báns. Female bamboo. 15 inches girth, 60 feet high. Found up to 4,000 feet in the Siwáliks.

Bambusa stricta báns; male bamboo. Smaller than the former; found between 1,500 and 2,500 feet. Siwáliks and Salt Range.

Arundinaria utilis. Nigál or Nirgál. Found from 5,000 to 8,000 feet and up to the Rávi only. A hollow cane, larger than the falcata.

Arundinaria falcata. Gáru. Found between 9,000 and 12,000 feet. Small and tough.

BIRCH ... ... *Betula bhojpatra.* Burj. Bhuj. Found on the higher ranges of the Himalayas. Height 50 to 60 feet; girth 6 to 7 feet.

DHAK ... ... *Butea frondosa.* Nasa (Umballa), palás (Ludhiána), paláh (Kángra). Height 40 to 50 feet. Ascends to 4,000 feet. Common as far as the Jhelum.

DHÁMAN ... ... *Grewia oppositifolia.* Dhamman or bihul. A moderate-sized tree, 40 feet in height. Common in the Himalayas, and occasionally found in the Sulimáns and the Salt Range.

GONDI ... ... *Cordia angustifolia (or Rothii).* Gondni. A tree 30 to 40 feet in height. Planted or self-sown in the Punjab, south of the Salt Range.

KALYÁR ... ... *Bauhinia variegata.* A moderate-sized tree, found wild as far as the Indus.

LASURA ... ... *Cordia myxa.* Laswára, lasiára. Height 30 to 40 feet. Wild in the outer Himalayas, Siwáliks and Salt Range.

MULBERRY ... ... *Morus alba, and Morus Indica.* Tut, tul. The former is cultivated abundantly in the Pesháwar valley and the northern part of the Trans-Indus tract. It also grows in the Himalayas up to 11,000 feet. The latter is not uncommon in the outer hills up to 4,000 feet.

PALMS... ... ... *a.—Date palm. Phœnix Silvestris, and Phœnix dactylifera.* Khajúr, khaji. The *Silvestris* only attains an average height of 40 feet, and has no root suckers. It occurs wild in the Siwáliks, Salt Range and Eastern districts of the Province. The *Dactylifera* attains to a height of 100 feet, and is often surrounded by a mass of root suckers. It is common in the southern parts of the Punjab.

b.—Chamærops Ritchiana. Mazri, mizri, patha, pish. The dwarf palm. Grows almost exclusively in the Sulimán Range up to a height of 3,000 feet; occasionally found in the Salt Range and in the Siwáliks east of the Jhelum.

PHALSA ... ... *Grewia Asiatica.* Height 25 feet. Found wild in the Salt Range and in the Umballa district.

PILCHI ... ... *Tamarix Gallica (Indica).* Lei. Jhau. Common throughout the province on the banks of rivers.

TAUR ... ... *Bauhinia Vahlii (racemosa).* A gigantic creeper, often 100 feet long; plentiful in Kángra and the Sub-Himalayan tract.

TUMBA KI BEL ... ... *Citrullus colocynthus.* A creeper. Sirsa.

WILLOW ... ... *Salix tetraspuma.* Bent, bet, bed. Only found planted in the Punjab, except on the banks of the Himalayan rivers, where it is found wild up to 6,000 feet.

APPENDIX NO. II.

DELHI DIVISION.

APPENDIX No. II.

TABLE OF THE DELHI DIVISION.

District.	Work.	Caste.	Number employed.	Wages.	Outturn.	Profits.	Centres, &c.
Delhi	Fans	Mussalmán Kassáb ...	290	1 to 4 annas.	Rs. 1,400	Rs. ...	Delhi and Sonepat.
	Bán munj	Mussalmán Meos and Banjárás.	260	Do.	1,400	105	Ballabgarh and Sonepat.
	Baskets	Jhínwars	...	...	...	...	Sonepat.
	Pattals	Bakkáls	16	...	100	...	Do.
	Matting	...	5	Annas 2-6.	250	...	Delhi.
	Paper	...	...	...	25,500	...	Do.
	Cane-work	...	10	Annas 2-6 to annas 3-0	...	...	Do.
Gurgáon	Foot-stools	Kahárs and Dhínwars ...	29	Annas 2-6.		...	Farukhnagar.
	Bán carpet	Minas (Hindús)	5	3 to 4 annas.		...	Gurgáon Civil Station.
	Fan-making	Muhammadan butchers ...	52			...	...
	Chhínká	Hindu Gaurás ...	54			...	...
	Bán and ropes...	Ahírs, Gujars, and Gauras.	175			...	...
	Bed-weaving	Mussalmán butchers and labourers.	50	Annas 1-6 to annas 2 and annas 2-6.	Rs. 26,100-0-0	...	...
	Matting	Khumrás	13			...	
	Necha and gattá	Patháns and Fakírs ...	15			...	Ferozepore.
	Baskets	Dhinwars and Sweepers ...	87			...	Do. Jhirka.
	Munj ropes	Muhammadans, Meos, Fakírs, Málís (Hindu), and Chamárs.	175			...	Do.
	Heavy thick well ropes ...	...	...	...	...	...	...
Karnál	Ropes (common) of san ...	Lodhás and women of Kanjar tribe.	90	Rs. 1-14-0 per maund.	...	...	Karnál and Pánipat.
	Chhínkás	...	...	...	...	...	...
	Nets	...	...	...	...	...	...
	Jális	...	...	...	...	...	...
	Fans of khajúr leaves ...	Jhínwars	...	...	...	...	...
	Matting of khajúr leaves ...	Do.	...	Rs. 6 per 100 square yards.	...	...	...
	Boriás or safs of khajúr leaves.	Do.	...	...	...	...	...
	Bán and ropes of munj and Bhábar.	Banjárás	...	...	...	...	...
	Borás or sacks of dhák roots.	...	...	...	...	...	...

	Boris and tát of san ...	...	...	...	...	...	...
	Straw beards and hair ...	...	...	...	...	...	...
	Matches of dry stalks of san and sani.	...	...	...	...	...	Pánipat.
	Tát-pattis or sackcloth ...	...	...	...	...	...	...
Hissár	Bán and ropes of munj ...	Játs and Pachadás ...	210	Annas 2 to 3 per day in all the branches excepting the Chikwálá, who earns about annas 4 a day.	11,228	Rs. 25 % or 4 annas in a rupee on the average.	Portion of Bhiwáni Tahsíl.
	Sutli and ropes of san ...	Bishnois. Sikh Játs, Boolás, and Bányás.	73		16,500		...
	Bhábhar bán	Ját Sikh	20		40		...
	San borás	Bágris, Kumhárs	48		...		Chaharwála, Chak Bagar, Kagdúná, Jogiwálá, Chadiwál, Bakriánwal, Dhukrá, Kheri, and Girdia Khera in Sirsa Tahsíl.
	Ankálá ropes	Bágri Játs	38		70		
	Khári and chhaj of tili ...	Chuhrás	65		...		
	Sirkis and jhárás of khas, &c.	Dhanaks	36		...		
	Mondhás of káná	Ranghars and Nilgars ...	3		50		
	Chicks of káná and bamboo...	...	3		200		...
	Ropes of patsan	...	...		...		...
	Thin ropes of dhák for borás	Kumhárs	...		...		...
	Bán of *tunba-ki-bel*	Bágris	...		...		Sirsa Tahsíl.
	Chhínkás of munj	...	...		...		...
	Chamrakh of munj	...	...		...		...
	Bán and ropes of dáb... ...	...	...		...		...
	Ropes of kharsáná or sania for tangar.	Bágris	...		80		...
	Káns bán	...	...		...		...
	Tattis and hand fans of khas	Ghosís	...		50		...
	Baskets of branches of jal, mulberry, kapás, and dhák	...	...		...		...
	Matting of pater	...	...		...		...
	Tapris of san	...	...		200		...
	Paper	Prisoners	...		1,725		Jail at Hissár.
	Sírkis of tuli and káná ...	Sánsis and Heris	...		375		...
	Kháris (baskets) of Tuli or Káná.	Heris	...		400		...
	Chhaj and jháras of tuli or káná.	Sánsís	...		50		...
Rohtak	Ropes and twine of san and munj.	...	...	...	...	...	...
	Weavers' brushes of munj and khas.	...	...	...	...	...	...
	Baskets, chicks of sarkandá	Mehtars	...	...	...	...	Jhajhar Tahsíl.
	Hand-fans of date palm ...	Sheikhs	...	...	400	...	Bahádurgarh in Sámpla Tahsíl.
	Tattís of khas	...	...	...	...	...	...
	Paper	Prisoners	...	...	1,934	...	Rohtak Jail.
Umballa	Tát-patti (gunny or sack-cloth	Loheris (Hindú)	110	2 to 3 annas.	2,155	...	Jagádhri and Buriya.
	Ropes, jálís (net) and chinkás	Kuch bandhe (or Gipsy) ...	50		320	...	...
	Bán (munj)	Banjárás (Hindú), Chamárs, and Chuhrás.	280		3,760	25 to 45 %	...

APPENDIX No. II—*concluded.*

TABLE OF THE DELHI DIVISION.

District.	Work.	Caste.	Number employed.	Wages.	Outturn.	Profits.	Centres, &c.
					Rs.		
Umballa—*concluded* ...	Bán (bhábar)	Hindú Kahárs and Bázigars	525		3,760	...	...
	Mohrás	Patháns	2		225	...	...
	Mats and hand-fans	Kahárs	764	2 to 3 annas.	764	40 to 50 %	Mauza Kutti.
	Ropes for boats	Chamárs	105		...	...	...
	Sutli (hemp cordage) ..	...	...		...	...	...
	Paper	Prisoners	80	2 annas per day	3,450	Profits amount to	Umballa Jail.
	Munj carpets	Do.	15	3 annas per day ...	1,200	Rs. 1,500.	Do. do.
Simla	Tát or sacking of san ...	...	...	...	...	...	Náhan, Nálagarh, and Biláspur.
	Boris of tát for pack animals and camels.	...	...	...	...	...	...
	Tát and ropes of sankokrá ...	...	...	...	...	...	...
	Paper	Kolis	...	...	...	...	In Bhajji, State.
	Ropes of liber or inner bark of the biúl.	...	...	...	...	...	Náhan, Biláspur, Bashahr, Kumharsen, Júnga, Mahlog, Kunhiár, Bhajji.
	Ropes of san	...	...	...	...	...	Nálágarh.
	Ropes of sankokrá	Zamíndárs	...	...	...	...	Nálágarh and Biláspur.
	Ropes of bággar grass ...		...	...	...	...	Náhan, Nálágarh. Baghát.
	Ropes of bhang		...	...	...	...	Kumharsen, Jubal, Kyunthal, and Bhajji.
	Ropes of taúr		...	...	...	...	Biláspur, Mangal, Bhajji, &c.
	Ropes of káril or bhánar ...	...	...	...	...	...	Bashahr, Kumharsen, and Mahlog.
	Bhábar or nettle ropes ...	...	...	...	...	...	Mahlog, Júnga.
	Bán munj	...	...	...	...	...	In the hills as far as Kumharsen.
	Fuze for matchlocks of taúr	...	...	...	...	...	Outer Hills.
	Mats or chatáis of palm-leaves.	...	...	...	...	...	Lower Hills.
	Mandri or thick mats of Shahdaili.	...	...	...	...	...	Upper Hills.
	Baskets, screens, and chicks of bamboo.	...	...	...	...	...	...
	Kiltás and baskets of nigál ...	Bhanjrás (a low caste of Hindús.)	...	...	...	...	...
	Brushes ("Juri") of bággar grass.	Bhanjrás	...	...	...	...	Nálagarh and Náhan.

TABLE OF PRICES.

Work or raw material.	Delhi.	Gurgáon.	Karnál.	Hissár.	Rohtak.	Umballa.	Simla.
Paper	Rs. 7 per gadi	...	Rs. 4-0-0 per maund.	...	...	...	...
Mondhás	...	4 to 8 annas each ...	...	...	...	Annas 6-0 each.	...
Necha of munj	...	2 to 8 annas each ...	...	...	...	...	...
Bán munj	...	Re. 1-8-0 to Rs. 4-0-0 per maund.	Rs. 2-0-0 per maund.	8 to 16 seers per rupee.	...	...	...
Boriás	...	...	Annas 2-0 each.	...	...	...	..
Matting of date palm ...	...	...	Rs. 6-0-0 per square yard.	...	...	...	...
Sutli of san	...	...	...	4 seers per rupee.	...	...	...
Sutli of ankálá	...	...	...	3 to 3½ seers per rupee	...	...	...
Mats	...	...	...	...	...	Annas 8-0 each.	...
Fans of date palm ...	...	...	...	...	1 pice to annas 10-0 each.	Anna 1-0 each.	...
Bhang ropes	...	...	...	...	...	...	4 to 6 seers per rupee.
San	...	...	...	...	...	...	8 to 10 seers per rupee.
Bággar grass	...	...	...	...	...	...	30 to 40 seers a rupee.
Sankokrá	...	...	...	...	...	...	12 seers a rupee.
Bamboos for baskets ...	...	...	...	...	...	...	Re. 1 per 100.
San rops	...	...	Rs. 1-14-0 per maund.	...	...	...	...

TABLE OF EXPORTS AND IMPORTS AND RAW MATERIAL.

District.	Exports.			Imports.			Value of raw material used in the district annually.
	Work or raw material.	Place.	Amount.	Work or raw material.	Place.	Amount.	
						Rs.	
Delhi	Bán	Meerut and Baghpat ...	...	Bán of bhábbar ...	N-W. Provinces ...	1,000	Rs. 6,165 worth of bhábbar worked up.
				Sirkis.	Other districts of Punjab.	...	...
				Pardás made from sirkis.			
				Mondhás of reed and bán.	Gurgáon	...	...
Gurgáon	Bán	Delhi, Muttra, and Agra...	Rs. 5,500 ...	Bán	Alwar and Tijara,	6,000 maunds.	...
	Munj	Ditto ditto	„ 7,000 ...	Munj	Nábha and Jaipur.	6,000 do.	...
						Rs.	
				Paper	Jullundur Jail ...	1,000	...
				Lucknow Mill paper	Lucknow	5,000	...
				Paper	Delhi, Kosi in Muttra District, and Alwar territory.	...	...
Karnál	...	...	...	Munj and bhábbar	Other districts ...	...	...
						Rs.	
Hissár	Bán	Patiála	Rs. 1,500 ...	Gunny-bags ...	Calcutta	8,000	...
		Ferozepore	„ 1,000 ...	Ditto	Bombay	7,000	...
				Paper	Lucknow	Rs. 200 to Rs. 300	
				Tát-patti san cloth...	Pilibhit ...	„ 600 to „ 800	
				Paper, European-made	Through Delhi ...	„ 1,000 to „ 1,200	
						Rs.	
				Bán ...	Gurgáon ...	11,637	
					Patiála ...	60	
					Ferozepore ...	8,000	
					Bháwalpur ...	100	
				Sutli ...	Patiála ...	200	
					Hoshiárpur ...	430	Rs. 22,486.
					Delhi ...	170	
				Tát-patti ...	Hoshiárpur ...	450	
					Delhi ...	80	
				Mondhás ...	Ferozepore ...	50	
				Tát bags ...	Do. ...	25	
Rohtak	Fans	...	Rs. 250 to 300	San and munj ropes and tát.	North-Western Provinces.	5,000	
	Khas for tatties, &c.	...	...	...	...	...	

			Rs.			Rs.	
Umballa	White paper and munj carpets.	Other districts	4,000	Gunny cloth (tát-patti).	Saháranpur ...	1,050	
	Patti-tát or gunny cloth ...	Ludhiána	350	Gunny-bags ...	Calcutta and Cawnpur.	12,250	
	Bán (munj)	Nábha, Patiála, and Kotla States.	400	Bán (munj) ...	Meerut and Saháranpur	1,400	
	Bán bhábar		800	Fans ...	Saháranpur ...	30	Rs. 18,065
				White paper ...	Muttra, Siálkot ...	Rs. 1,500 and 200	
				Foolscap paper and Serámpur paper.	Bombay and other places.	Rs. 3,500	
				Lakhnawi paper ...	Lucknow ...	5,000	
				Bán (munj) and bán bhábhar.	Hill districts of Punjab.	2,500	
Simla and Hill States ...	Baskets	...	...	Baskets ...	Náhan and Patiála territoy.	...	...
	Bhoj pattar	Plains and Hill Cantonments.	...	Baskets and kiltás ...	Kyunthal and Patiála.	...	...
				Nigál ...	Náhan and Kumharsen.	...	...
				Kiltás ...	Baghat ...	...	...

APPENDIX NO. II.

JULLUNDUR DIVISION.

APPENDIX II.

TABLE OF THE JULLUNDUR DIVISION.

District.	Work.	Caste.	Number employed.	Wages.	Outturn.	Profits.	Centres, &c.
					Rs.		
Jullundur	Sutli of san	(Hindu) Brahmans ...	30		8,100		
		Súds	20		...		
		Khatrís	50		...		
		Labánas	30		...		
	San ropes	(Musalmáns)	...		2,000	$12\frac{1}{2}$ per cent.	Rájpura, Tahsíl Jullundur.
	Taprís of san	Rájpúts	90		1,078		
	Guthlis of san ...	Ráins	45		200		
	Bán munj	Rájpúts (Musalmáns) ...	200		8,037	...	Jullundur City.
	Múrhás	Ráni Musalmáns	200		701	...	Do.
	Munj ropes	Teli ,, ...	6		3,271	...	Bilga.
	Munj sirkís	Gujar ,, ...	4		454		
	Bán of bagar ...	Chamárs	207		1,100		
	Mats of palm leaves...	Do.	20		1,400		
	Fans	Jhínwars (Hindús) ...	25		730		
	Bán of palm leaves ...				12		
	Mats of dihla ...	Jhínwars (Hindús) ...	115	2 or 3 annas per diem.	150		
	Thadas (mats) ...				16		
	Mats of dib				1,259		
	Baskets of bamboo ...				325		
	Changer ,, ...				500		
	Chhalmi ,, ...				400		
	Chicks ,, ...	Bhanjrás (Hindús) ...	112		400		
	Chhikkás ,, ...				508		
	Chhabás ,, ...				813		
	Jhárús (brooms) of bánsi ...	Sweepers	20		50		
	Jurees of baggar	Mazbis	17		311		
	Bore made of bakal ...				678		
	Bán do. ...	Kumhárs (Musalmáns) ...	25		107		
	Rassás do. ...				23		
Ferozepore	Sutli of san	...	...	...	...	...	
	Ropes of sutli	...	...	...	...	...	
	Nets of sutli	...	...	...	...	...	
	Money-bags of sutli ...	...	...	...	...	...	
	Floor mats of tát patti ...	...	...	...	...	...	Jail at Ferozepore.
	Bags of tát patti	...	..	...	...	...	

Profits of trade in manufactured articles of bamboos and matting of dib and palm leaves are 4 annas, and profits in trade of other articles are 2 annas in the rupee.

	Paper	...	...	...	...	...	...	Ferozepore Jail.
	Ropes and door mats of sankokrá or patsan.	...	...	...	...	...	...	
	Ropes and small nets of madar fibres.	...	...	...	...	...	...	
	Bán munj	...	...	...	...	...	...	
	Munj ropes	...	...	...	...	...	...	
	Munj darees	...	...	...	...	...	...	
	Munj door mats	...	...	...	...	...	...	
	Brushes of munj	...	...	...	...	...	...	
	Chicks of bamboo	...	...	...	...	...	...	
	Jafrís of ,, ...	...	...	...	...	...	...	
	Thatch of ,, ...	...	...	...	...	...	...	
	Floor matting of dib ...	...	...	...	...	...	...	
	Fans of date palm	...	...	...	...	...	...	
	Straw baskets	Women of the city.	...	...	...	...	...	Ferozepore City.
								San Manufactures.
HOSHIARPUR	String of san (1)	Kasia (Muhammadans) ...	50	...	15,000	...	...	(1) Saido patti.
	Ropes of ,, ...	Kázi ,, ...	10					(2) Bahádarpur Babzián.
		Shekh ,, ...	33					(3) Naru Nangal.
	Tát (2)	Turk ,, ...	26					(4) Manjpur.
		Joláha ,, ...	20					(5) Basidadu.
		Other castes ,, ...	8	...	1,700	...		(6) Jahan Khelan.
		Labánás (Hindu) ...	124					(7) Basipuráni.
		Other castes ,, ...	65					(8) Mahtábpur.
	Gunny-bags (3)...	Gujar (Muhammadans) ...	5	...	...	...		(9) Hamra.
		Shekh ,, ...	4	...	...	...		
		Kumhar (Hindu) ...	32	...	...	...		
					Rs.			*Munj Manufactures.*
	(1) Bán munj, (2) ropes, (3) carpets of munj.	For No. 1.						
		Gujars (Muhammadans) ...	30		Bán munj=14,000			Basi Panch Bháiyán.
		Patháns ,, ...	11		Ropes of ,, = 2,550			Chak Harnauli.
		Jats ,, ...	8		Carpets ,, = 2,200			Premgarh.
		Kahárs ,, ...	3		...			Hoshiárpur and Sathri.
		Aráins ,, ...	2		...			
		Fakírs ,, ...	2		...			
		Sansars ,, ...	139		...			
		Other castes	4		...			
		Bati (Hindús)	56		...			
		Other castes	374		...			
		For No. 2.						
		Sansars (Muhammadans)	20		...			
		Gujars ,, ...	12		...			
		Damna and other castes (Hindús)	30	Generally from 2 to 4 annas a day. For important kinds of work not less than 4 annas per diem.	...	(1) Articles of san, 20 to 25 per cent. (2) Do. of munj and baggar, 25 per cent. (3) Do. of alsi, 20 to 25 per cent. (4) Do. of date palm leaves and bamboo, 150 per cent.		

District.	Work.	Caste.	Number employed.	Wages.	Outturn.	Profits.	Centres, &c.
Hoshiarpur—*concluded.*		For No. 3.		Generally from 2 to 4 annas a day. For important kinds of work not less than 4 annas per diem.			
		Sansars (Muhammadans)	16				
		For (*a*).					
		Gujar (Muhammadans) ...	10				
		Bati (Hindús)	43				
		Other castes	145				
		For (*b*).					
	(*a*) String of baggar ...	Bájpút (Hindu)	6		Rs. 2,500	(1) Articles of san, 20 to 25 per cent.	(*a*) Chak Harnauli.
	(*b*) String of alsi	Lohár „	4			(2) Do. of munj and baggar, 25 per cent.	(*b*) Harse Mansor.
		For (*c*).			380	(3) Do. of alsi, 20 to 25 per cent.	(*c*) and (*d*) Mangal Sháhidán.
	(*c*) Fans				1,000	(4) Do. of date palm leaves and bamboo, 150 per cent.	(1) Dattarpur, (2) Jejjor, (3) Unah, (4) Anandpur, (5) Núrpur, (6) Mairi, (7) Jowar, (8) Jowhára, (9) Dul, (10) Dul Batwálan, (11) Dharmsál, (12) Chapro, (13) Hardo Nahri, (14) Thathal, (15) Ambota, (16) Baro Bahádar Kali.
	(*d*) Mats, (*e*) sieves, (*f*) baskets, (*g*) scales of bamboo.	Dumna and other castes (Hindús).	66		Mats, 3,250 (*e*), (*f*) and (*g*) Rs. 4,750	(*e*) (*f*) (*g*)	
		For (*d*).					
		Gujar (Muhammadans) ...	25				
		Other castes „ ...	14				
		For (*e*), (*f*), & (*g*).					
		Dumna and other castes (Hindús).	204				
	Bamboo chicks	...	...		...	...	
Ludhiana	Sack cloth weaving	Kumhárs (Hindús) and (Muhammadans).	490	Not exceeding 2 annas a day.	...	...	
	Sack cloth for sides of carts (pakhulís).				...	...	
	Bau, sacks, twine, ropes, netting (tangar).	Labánás, Sainís, Jats, Bowriás, Mahtams and sweepers.	278		...	...	
	Mats and fans	Jhínwars	187		...	...	
	Ropes of sankukra ...	...	...		...	...	

	Paper	...	...	...	...	...	Ludhiána Jail.
	Ropes, string, sacks, nets and money-bags of flax.	...	...	...	...	...	
	Munj ropes, string and bán for beds.	...	...	...	...	...	
	Mats from dib	...	...	...	...	...	
	Fans of date palm leaves ...	...	...	...	...	...	
KANGRA PROPER... ...	Fishing nets of ahan ...	...	...	...	...	...	Kángra District.
					Rs.		
	Paper	Bamboo. Dumnás, a low class of basket-makers and workers in bamboo manufactures.	...	From 2 to 6 annas per diem.	1,699	...	Dharmsála Jail.
	Pern		...		100	...	
	Patár		...		200	...	
	Changer		...		1,000	...	
	Chhába or weighing scale.		...		2,000	...	
	Baskets		...		300	...	
	Chhalni		...		500	...	
	Chhar		...		100	...	Dera and Kángra Tahsíls.
	Karni or karandi ...		...		30	...	
	Travelling baskets ...		...		100	...	
	Waste-paper baskets		...		20	...	
	Kira		...		2,000	...	
	Chicks		...		500	...	
	Múndás		...		100	...	
	Bird-cages		...		50	...	
	Ropes of dhamán for agricultural use.		...		...	...	
	String of dhamán for bedsteads.		...	From 2 to 4 annas per diem for rope and bán making classes.	...	...	
	San ropes	All classes engaged in agriculture make ropes and twine for agricultural purposes for themselves, and Darains and Sansais make bán of san, sankukra, bagar and munj for sale.	...		...	...	
	San bán		...		...	...	The Hamírpur Tahsíl is noted for munj and other ropes and twine.
	Trangri of san		...		...	...	
	San bags		...		...	...	
	San tát		...		...	...	
	Fishing-nets of san		...		...	...	
	Tennis ditto		...		...	...	
	Mats of san		...		...	...	
	Money-bags of san		...		Rs. 12-8-0	...	Dharmsála Jail.
	Hemp twine		...		...	...	Ditto.
	Ropes, string and bags of sankokra for storing corn.		...		...	...	Ditto.
	Ropes and string of taur ...		...		...	...	
	Slow matches of taur for matchlocks.		...		...	...	
	Pattals and dunás of taur leaves (leaf dishes and cups)	Dusálís	Between 300 and 400 families.		...	...	Kángra District.
	Some articles named under bamboo are made of hirgal cane.	...	...		...	...	

APPENDIX II—*continued.*

District.	Work.	Caste.	Number employed.	Wages.	Outturn.	Profits.	Centres, &c.
Kangra Proper—*concld.*	Mats of khajúr leaves ...	...	...	From 2 to 4 annas per diem for rope and bán-making classes.	...	...	
	Coarse ropes and brooms of bagar.				...	...	
	Coarse string of bagar ...	...	...		...	...	
	String of munj	...	...		...	...	
	Mondhas of munj	...	...		...	...	
	Small mats of munj	...	...		...	...	
	Door mats of munj	...	...		Rs. 25	...	Dharmsála Jail.
	Ropes and churning string of thuh kawár gandal.	...	...		...	...	
Kulu Subdivision of Kangra.	Paper	Hindús, all castes, Brahmins, Kanaits, Dágis, Bárás (or Baidas), Kolís, Lohárás, &c., &c.	Allowing one worker for each family the result is 20,000 workers of all castes.	...	Estimated value of annual outturn of ropes, pulas, &c., made from hemp, Rs. 4,000.	25 to 50 per cent.	Spiti.
	Ropes of hemp (distinguished locally by different names).			...			
	Shoes of hemp			...			Rághopur Kothi.
	Fishing-nets of hemp and nets for snaring hawks.			...			
	Bags of hemp			...			
	Ropes of various kinds of bagar.			...			
	Thick string of bagar for charpoys.			...			
	Shoes of bagar grass ...			...			
	Brooms of bagar grass ...			...			
	Mats of rice straw called mandri.			...			*In Kulu.* Kothís Khokhan, Mahárája Fárapur, Nagar, Bhalán and Kot Kandi.
	Baskets of various sorts of nirgal.			...			
	Ropes and pula soles of nettle.			...			*In Saráj.* Kothis Narayangarh and Sirigarh.
	Ropes of dhaman			...			
	Ropes of the elm and other trees.			...			

Work or raw material.	Jullundur.	Ferozepore.	Hoshiárpur.	Ludhiána.	Kángra Proper.	Kulu Subdivision of Kángra.
Twine (sutli) of san	4 sérs per rupee	Rs. 12 to 15 per maund ...	...	4½ annas per sér ...	...	...
Bánmunj	Ditto	3 to 8 sérs per rupee ...	4 sérs per rupee ...	7 sérs per rupee ...	...	...
Mats of dila	8 annas per mat	...	...	...	...	...
Munj	28 sérs per rupee	Rs. 2, Rs. 2-8-0 or Rs. 3 per maund.	...	40 sérs per rupee ...	...	...
Bagar	1 maund 8 sérs per rupee ...	...	...	...	...	...
Dib	1 maund 10 sérs per rupee ...	...	...	...	...	...
Palm leaves	32 sérs per rupee	...	...	...	...	...
San	10 sérs per rupee	Rs. 5 to Rs. 7 per maund ...	4 sérs per rupee ...	...	...	...
Tát patti	...	2 annas per yard ...	...	...	...	...
Bán of kahín...	...	Rs. 2-8-0 or Rs. 3 per maund	...	...	...	...
Paper	...	Rs. 8-10-0 and Rs. 5-12-0 per ream.	...	...	...	...
Alsi	...	...	4 sérs per rupee ...	...	...	...
San matting Yds. ft. in. 10 × 1—2 each ...	...	...	Rs. 1-8-0 per piece ...	...	...	...
Munj carpets	...	...	5 annas per square yard	...	...	...
Date palm leaf mats	...	...	10 annas ditto ...	...	...	...
Date palm hand fans	...	...	5 annas per score ...	...	...	...
Bamboo baskets	...	...	1 anna to 8 annas each...	...	...	...
Gunny cloth	...	...	...	7 annas per yard ...	...	...
Bags of san	...	...	...	Rs. 27 per hundred ...	...	...
Nets of san for carts	...	...	...	4 annas each ...	...	...
Money-bags	...	...	...	16 per rupee ...	...	...
Ropes	...	...	...	4 annas per sér ...	...	...

TABLE OF PRICES—*continued.*

Work or raw material.	Jullundur.	Ferozepore.	Hoshiárpur.	Ludhiána.	Kángra Proper.	Kulu Subdivision of Kángra.
Sankukra	...	...	...	10 to 15 sérs per rupee	...	...
Ropes of munj	...	...	...	13 sérs per rupee ...	...	...
Of bamboo. Peru	...	...	...	...	Re. 1 to Re. 1-8-0 ...	...
Of bamboo. Patár	...	...	...	...	Annas 4 to Re. 1 ...	...
Of bamboo. Changer	...	...	...	...	1 to 4 annas ...	...
Of bamboo. Chhába or weighing scales ...	...	...	...	...	1 to 3½ annas per pair...	...
Of bamboo. Baskets	...	...	...	...	½ to 2 annas ...	...
Of bamboo. Chhalni	...	...	...	...	½ to 2 annas ...	...
Of bamboo. Chhiku	...	...	...	...	¼ to 2 annas ...	...
Of bamboo. Chhar	...	...	...	...	2 to 8 annas ...	...
Of bamboo. Karni or karandi	...	...	...	...	½ to 1½ annas ...	...
Of bamboo. Travelling baskets	...	...	...	...	Annas 8 to Rs. 2 ...	...
Of bamboo. Waste-paper baskets ...	...	...	...	...	1 to 2 annas ...	...
Of bamboo. Kira	...	...	...	...	...	...
Of bamboo. Chicks	...	...	...	...	Anna 1 per square foot	...
Of bamboo. Múndás	...	...	...	...	Annas 8 to Re. 1 ...	...
Of bamboo. Bird-cages	...	...	...	...	2 to 8 annas ...	...
Money-bags of san	...	...	...	...	4 annas each ...	...
Ropes of hemp	...	...	...	...	...	1 to 3 annas a piece.
Shoes of do.	...	...	...	...	...	2 and 4 annas a pair.
Ropes, mats, sandals and baskets ...	...	...	...	...	...	1 anna or less up to 4 annas an article.
Hemp of superior quality	...	...	...	...	...	8 sérs per rupee.
Hemp of inferior quality	...	...	...	...	...	16 sérs per rupee.

TABLE OF EXPORTS AND IMPORTS AND RAW MATERIAL.

District.	Exports.			Imports.			Raw materials used in the District.
	Work or raw material.	Place.	Amount.	Work or raw material.	Place.	Amount.	
			Rs.			Rs.	
JULLUNDUR	Sutli of san	Ferozepore	600	Sutli of san ...	Hoshiárpur ...	3,703	Rs. 85,444, san and sankukra.
		Ludhiána	250	...	Ludhiána ...	359	
		Lahore	900	Bán munj	Hoshiárpur ...	5,000	Rs. 15,181 other raw material.
		Amritsar	1,600	Bán bagar ...		13,097	
	Bán and ropes of munj ...	Ferozepore	700	Brooms of bagar ...		93	
		Ludhiána	400	Chhábás of báns ...		500	
		Lahore	2,000	Changer of báns ...		500	
		Amritsar	2,800	Tokrás of báns ...		400	
FEROZEPORE	...	...	...	Bamboo ...	From other districts	...	
				Palm leaf mats ...	Peshâwar ...	...	
HOSHIARPUR	San	Other districts of the Punjab.	10,000	Bamboo baskets sieves and scales.	Kángra	1,000	Rs. 42,900.
	San-made string		2,700	Paper ...	Calcutta, Lucknow, Delhi, Maler Kotla, Siálkot and Jullundur Jail.	...	
	Do. tát ...		300				
	Munj string		7,500				
	Bagar and its string ...		1,250				
LUDHIANA	...	...	...	San	Other districts ...	To a considerable extent.	

TABLE OF EXPORTS AND IMPORTS AND RAW MATERIAL—*concluded.*

District.	Exports.			Imports.			Raw materials used in the District.
	Work or raw material.	Place.	Amount.	Work or raw material.	Place.	Amount.	
						Rs.	
Kangra Proper ...	Ahan (nettle) fibre	England	Small quantity.	Munj	Hoshiárpur	800	
	Patár of bamboo	...	Very little.				
	Changer of bamboo	Plains	Rs. 800				
	Chhába or weighing scales of bamboo.	Plains	1,500				
	Baskets of bamboo	By pilgrims...	200				
	Chhalni of bamboo	..	400				
	Chhikku of bamboo	By pilgrims...	400				
	Travelling baskets of bamboo	By visitors to the valley	...				
	String and brooms of bagar...	Adjoining districts in the plains.	From Rs. 200 to 400				
Kulu Subdivision of Kangra District.	Baskets	Rámpur, Bashahr	55	...	...	...	Rs. 3,000 worth of hemp is annually worked up in the Kulu Subdivision.
Plach Tahsil of Kulu...	Kalta, patár and tokrás, &c.,	Ditto	55	Nets of bhang fibre	Suket State ...	...	

APPENDIX NO. II.

LAHORE DIVISION.

APPENDIX II.

TABLE OF THE LAHORE DIVISION.

District.	Work.	Caste.	Number employed.	Wages.	Outtturn.	Profits.	Centres, &c.
Lahore	Ropes or string of munj or hemp.	Mahtams (Hindu) (Mussalman.)	1,100	For making bán munj ... 2 annas.	Articles of munj, Rs. 30,000.	6½ per cent.	Baini, Shobewál, Santpura, and Mari.
	Charpoys of munj or hemp ...	Labánás (Hindu) ...	400	For making articles of hemp or san ... 4 „	Article of san, Rs. 30,000.		
	Sacks of do. ...	Khatries do. ...	40	For other articles not made from hemp 3 „	Articles of sankokra, Rs. 2,500.		
	Hammocks of do. ...	Aroras do. ...	100		Articles of khas, Rs. 10,000.		
	Kajawas, &c., of do. ...	Bairupeas do. ...	550		Articles of date leaves, Rs. 400.		
	Miscellaneous articles of munj, san, khas, sankokra, pachai, dib, bet, palm leaves and patha peshawri.	Purbeas do. ...	50		Articles of pachai, Rs. 100.		
	Máhals (well ropes) of munj and pachai.	Mussalmans of various castes	110		Articles of dib, Rs. 4,000.		
	Netted bags of munj string.				Articles of bent, Rs. 4,800.		
	Mats of do.				Articles of patha-peshawri, Rs. 10,000.		
	Darries of do.				Paper, Rs. 6,000.		
	Mops of do.						
	Boat ropes of do.						
	Ekka fastenings of do.						
	Sacking of san string and sutli.						
	Packing cloth of san string and sutli (shalita).						
	Nose bags of san string and sutli (tobra).						
	Panniers of do.						
	Mattresses (gadelas). do.						
	Tatties of khas.						
	Pardahs of do.						
	Fans of do.						
	Surahi covers of khas						
	Fans of date leaves						
	Fly-killers (jhalani) of date leaves.						
	Darries, mats, and ropes of American *aloe* or *agave*.	...	...	...	...	...	Lahore Central Jail.
	Twine of madar ...						

Amritsar	Ropes of munj and san, san and munj bán.						
Gurdáspur	Ropes of san.						
	San ván ...	Mussalman Turks ...	24	From 2 to 4 annas a day.	.....	.....	Mauza Gharota Kalán in Pathánkot Tahsíl.
	Patti or coarse matting of san string.	Do. Telis ...	58				
	Chuts or large bags of san ...	Hindu Labánás and Telis...	29				
	Ropes of sankokra ...						
	Mats of palm leaves ...						
	Bán munj for beds ...						
	Ropes of munj ...						
	Coarse matting of munj ...						
	Chinkás do. ...	Malláhs or boatmen, Hindus, Bahrupias, and Dammas.	160		Rs. 9,357 of munj and bamboo articles.		
	Tangars do. ...						
	Baskets of kána ...	Hindu Labánás, Changars, Chuhras.	105				
	Stools (mondhás) of kána						
	Chicks do.						
	Sirkis of tili kána ...						
	Chaj or winnowing baskets of do. ...						
	Coarse mats of era ...	Mussalman Machis ...	33				
	Rope of era ...	Malláhs or boatmen.		From 2 to 4 annas a day.			
	Twine of era ...						
	String or bán of alsi ...						
	Ropes of dhamman ...						
	Bamboo charpoys ...						
	Verandah chicks of bamboo						
	Baskets of all sizes of do.						
	Stools of bamboo ...						
	Cages of do. ...						
	Weighing scales or chabas of bamboo.						Batála Pathánkot.
	Poles of bamboo for shouldaris and tents.						
	Paper ...	.....	.....	.....	.....	.....	Gurdáspur Jail.
	Munj matting ...						
	Chick-making ...						
Mooltan	Ropes of san ...	Zamindárs ...		From 2 to 3 annas a day.		Rs. 6-0-0 per cent.	
	Chhinkas of san ...	Do. ...					
	Ropes of munj ...	...					
	Bán munj for cots ...	...					
	Chhinkas of munj ...	Hindus Aroras ...	230				
	Tangar do. ...	Muhammadan Jats ...	116				
	Mahals do. ...	Labánás ...	100				
		Balochis ...	32				
		Bazigar Gameras ...	131				
	Chhaj and fine chicks of flower-stalk of saccharum munja.	Muhammadans, Chuhras, and Bolá Shahi Chuhras.	1,085				
	Chicks of káná ...						
	Sirkis or screens of kana ...						

District.	Work.	Caste.	Number employed.	Wages.	Outturn.	Profits.	Centres, &c.
Mooltan—*concluded* ...	Ropes of palm and dwarf palm leaves.						
	Mats of do. ...	Hindu Aroras ...	115	2 annas a day.			
	Máhls of do. ...	Jats ...	25		...	...	Mooltan City and Cantonments.
	Baskets of do. ...	Churas ...	108				
	Fans of do. ...						
	Chicks of do. ...						
	Chairs, stools, and chicks of bamboo slips.	Churas ...	10	5 to 6 annas a day.	...	...	Mooltan City, Civil Lines, and Cantonments.
		Purbias of low caste ...	15				
	Paper made in the District Jail.	Prisoners ...	From 125 to 150.	...	Rs. 4,220-7-0 during 1889-90.	Rs. 1,929-3-0	District Jail of Mooltan.
	Paper made in Mooltan City	Book-binders and Khojas...	20	...	...	...	Mooltan City.
	Paper made at Jalalpur Pirwala.	Muhammadan Khojas ...	...	...	Rs. 840 ...	...	Jalalpur Pirwala.
Jhang	Ván of munj.						
	Ropes of munj.						
	Nets of munj ván.						
	Máhls of munj.						
	Ván of kahin.						
	Ropes of do.						
	Nets of do.						
	Mahls of do.						
	Mats of date leaves.						
	Chhabees of do.						
	Máhls of do.						
	Ván of do.						
	Tatties of khas						
	Paper ropes and mats of bán.	Prisoners, generally Muhammadans.	75	...	...	...	District Jail at Jhang.
			15	...	...	...	
			5	...	...	...	
Montgomery ...	Ropes of san and sankokrá ...						
	Baskets of pilchi ...						
	Ropes of munj ...						
	Tangri of do. ...						
	Bán of do. ...	Rohtars, Mahtams, Chuhars and Agriculturists.	172 in all.	...	Rs. 1,800	Rs. 600	Hujra, Mabla, Shekhuká, Gadhoke, Sharaiuh, Rohela, Bhila and Gugera.
	Máhl of do. for wells ...						
	Múrhás of do. ...						
	Sirkis of do. ...						
	Chajs of do. ...						
	Tokris of do. ...						

Work or raw material.	Lahore.	Amritsar.	Gurdáspur.	Mooltan.	Jhang.	Montgomery.	Remarks.
Munj, undressed	20 sérs a rupee	...	...	...	25 sérs per rupee ...	14 to 30 sérs per rupee.	
Do., dressed	14 do. do.	...	...	Rs. 1-6-0 to 2-8-0 per maund.	16 do. do.	...	
San	6 do. do.	...	...	...	...	...	
Sankokrá	8 do. do.	...	...	...	...	...	
Khas	Rs. 5 per maund	...	...	...	...	...	
Date leaves	„ 1 do.	...	...	...	...	...	
Withies for basket-making	„ 20 do.	...	...	...	...	...	
Patha peshauri	„ 3 to 5 per maund ...	...	...	...	...	...	
Chicks of reed	...	...	2 to 8 annas each ...	Re. 1-8-0 or 2-0-0 per 100 square feet.	...	...	
Do. of bamboo ...	...	...	Re. 0-12-0 to 1-8-0 each	...	...	...	
Mondás or stools of reed	...	...	2 to 4 annas each ...	...	...	2 to 8 annas each ...	
Do. of bamboo ...	...	...	Re. 0-8-0, 1-8-0, 2-0-0, and also 3-0-0 each	...	...	...	
Sirkis	...	...	4 to 8 annas each...	Re. 0-8-0 to 0-12-0 per 100 square feet.	...	...	
Ván munj	...	...	8 to 12 sérs per rupee.	3 to 10 sérs per rupee.	5 sérs per rupee ...	4 to 12 sérs per rupee.	
Joris	...	...	3 pies per bundle ...	...	...	...	
Chhinkás	...	...	6 pies each ...	3 pies to 1 anna each,	...	...	

Work or raw material.	Lahore.	Amritsar.	Gurdáspur.	Mooltan.	Jhang.	Montgomery.	Remarks.
Tangri for holding bhusa, &c.	...	...	3 to 6 annas ...	Re. 0-6-0 to 1-8-0 per piece.	...	4 to 8 annas each ...	
Pattis	...	...	Re. 0-12-0, 1-2-0, and 1-4-0 for a piece of 8 yards.	...	...	...	
Mats of era	...	...	1 to 4 annas ...	...	...	...	
Do. of palm leaves ...	...	...	Re. 0-4-0 to 1-0-0 ...	Re. 0-8-0 to 0-10-0 per 100 square feet.	...	...	
San van	...	...	4 to 6 sérs per rupee.	8 to 12 sérs per rupee.	...	...	
Kana or reed	...	...	2 to 3 annas a bundle.	...	...	...	
San rope	...	...	5 to 7½ sérs per rupee.	8 to 12 sérs per rupee.	...	...	
Baskets of reed	...	..	2 to 4 annas each ...	...	...	...	
Chaj or sieve	...	...	Re. 0-1-0 to 0-1-6 each.	...	...	...	
Munj ropes	...	...	8, 12 and 16 sérs per rupee.	8 to 12 sérs per rupee.	...	6 pies to 2 annas per rope.	
Bamboo	...	...	Rs. 5 to 8 per 100 ...	...	...	...	
Munj well ropes	...	...	...	Re. 1-8-0 per piece...	...	...	
Máhis of palm leaves ...	...	...	...	Re. 0-4-0 each ...	...	...	
Fans of ditto ...	...	...	...	3 pies to 0-1-6 per piece.	...	...	
Baskets of ditto ...	...	...	...	3 pies to 1 rupee ...	...	...	
Chicks of palm stalks ...	...	...	...	Rs 5 per 100 square feet.	...	...	
Paper made at Jalalpur Pirwala.	...	...	...	3 to 5 annas per quire.	...	...	
Káhin	...	...	...	...	1 maund 10 sérs per rupee.	...	

TABLE OF EXPORTS AND IMPORTS AND RAW MATERIAL.

District.	Exports.			Imports.			Value of raw material used in the district.
	Work or raw material.	Place.	Amount.	Work or raw material.	Place.	Amount.	
Lahore ...	Munj ...	Mooltan, Gujránwála, and Montgomery.	Rs. 5,000 ...	Bent for office baskets.	Benares ...	Rs. 1,200	Rs. 35,350
	Mats of munj twine (from Lahore Central Jail).	England ...	...	San ...	Hoshiárpur and Jullundur.	Considerable quantity.	
				Cocoanut ropes ...	Calcutta ...	Rs. 1,000	
				Sacks ...	Do.	„ 2,500	
				Chatai ...	Peshawar ...	„ 5,000	
				Country-made paper.	Lucknow, Mathra and Siálkot.	...	
				Twine of munj ...	Villages in the Patiála State.	...	
Amritsar ...	...	...	...	...	...	...	Munj, 1,500 maunds. San, 250 „
Gurdáspur ...	Baskets of bamboo ... Stools of do. ...	Lahore and Amritsar, Districts.	Large quantities ...	Large variety of bamboo made articles.	...		
	Cages of do. ...	Lahore, Amritsar and Sialkot.	Do	These are brought in by traders at the Sultánpur Fair.			
	Poles of bamboo for tents and Shouldaries.	Commissariat Departments of Ferozepore, Mooltan, Jullundur, and other cantonments of the Punjab.		San ... Munj ... Bán munj ... Fans ... Paper ...	From other districts (names not specified).	Rs. 2,000 „ 200 „ 3,600 „ 200 „ 1,000	
	Tat-patti of san	Amritsar, Lahore, Jullundur, Mooltan, Ferozépore, Ludhiána and Ráwalpindi	Rs. 10,000 ...				
	Munj	Amritsar District. ...	„ 200 ...				
	Bamboo	Other districts of Punjab,	„ 2,000 ...				
	Articles made of san and sankokrá.	...	„ 10,000 ...				

TABLE OF EXPORTS AND IMPORTS AND RAW MATERIAL.

District.	Exports.			Imports.			Value of raw material used in the district.
	Work or raw material.	Place.	Amount.	Work or raw material.	Place.	Amount.	
Mooltan	Paper made in District Jail,	...	...	Munj	Some neighbouring villages in Bahawalpur State.		Rs. 2,291-4-0 for jail paper.
	Paper made at Jalálpur Pirwála	Bahawalpur and Dera Ismail Khan	...	Bamboo	Lahore, Amritsar, Muzaffargarh, and Dera Ghazi Khan.		
Jhang		Not given					
Montgomery	Munj or munj-made articles,	Lahore and Ferozepore Districts	Small quantities ...	Munj or munj-made articles ... Sutli made of flax and chatai	Bahawalpur and Bikáneer Lahore and Mooltan.		

APPENDIX NO. II.

RAWALPINDI DIVISION.

APPENDIX No. II.

TABLE OF THE RAWALPINDI DIVISION.

District.	Work.	Caste.	Number employed.	Wages.	Outturn.	Profits.	Centres, &c.
Rawalpindi	Paper	Prisoners	102	From 2½ to 3 annas a day.	Rs. 4,279	...	Ráwalpindi Jail.
	Fine string of san	...	...		...	...	...
	Webbing of san	...	...		...	...	...
	String for charpoys	...	...		...	...	...
	Ropes of san	...	...		...	...	...
	Ropes of sankokrá	...	...		...	...	...
	Twine and ropes of dhamman	...	...		...	...	...
	Cord of lasúra and kalyár ...	...	...		...	...	...
	Rope and string of palm leaf	...	...		...	...	...
	Mats of palm leaf	...	...		...	...	...
	Verandah and door chicks of bamboo.	...	...		...	...	...
	Bán of munj	...	...		...	...	...
	Bán of bhabar	...	...		...	...	...
	Fans of palm leaves	...	...		...	...	...
	Baskets of palm leaves ...	...	...		...	...	...
	Trangars	...	...		...	...	...
	Múrhas	...	...		...	...	...
Jhelum	Khurjís of san	...	...	...	...	...	...
	Máhls of munj	...	...	...	...	...	...
	Bán munj	Mosallís (originally sweepers by caste).	...	...	...	...	...
	Cables of bán munj	Ditto.	...	...	...	...	...
	Baskets of ditto	Ditto.	...	...	...	...	Jhelum City.
	Sirkís of munj	...	...	...	...	...	Ditto.
	San bán	...	...	...	...	...	...
	Trangars of san string ...	...	...	...	...	...	...
	String of alsi for cots ...	...	...	...	...	...	...
	Máhls of bhabar	...	...	...	...	...	...
	Bán of bhabar	...	...	...	...	...	...
	Fans, baskets and mats of patha.	Chiefly Hindús of tahsil Talagang.	...	...	...	...	...
	Large chicks of kána ...	...	...	...	...	...	...
	Brooms and baskets of pilchi.	Muhammadan agriculturists.	...	...	...	...	...
	Paper	...	...	...	...	...	Jhelum Jail.

SHAHPUR	Paper	...	...	...	...	...	Shahpur Jail.
	Ropes and string of kai, chujan and pataka grasses.	Agriculturists	...	...	...	...	...
	Boat cables of pataka grass...	...	...	...	...	...	...
	Ropes and string of sankokrá	...	...	...	...	...	...
	San ropes	...	...	...	...	...	...
	String and ropes of báns keora.	...	...	...	...	...	...
	Matting of dib grass ...	...	...	...	...	...	...
	Palm leaf matting	...	...	...	...	...	...
	Baskets of palm leaves ...	...	...	...	...	...	...
	Fans of palm leaves	...	...	...	...	...	...
	Grain sifters of tilís ...	...	...	...	...	...	...
	Baskets of tilís	...	...	...	...	...	...
	Ropes and string of munj ...	...	...	...	...	...	...
	Matting of sar	...	...	...	...	...	...
UJRANWALA	Coarse tát	Mussalmán Kumhárs ...	...	...	200	...	Kotti Bálgobind.
	Ropes of san, munj, sankokrá, babhar and sil.	Zamíndárs, *Hindús*, Sikhs, Kumhárs, Arorás, Labánás, Khatrís.	90,346	...	6,300	...	...
	String of san and munj ...	*Muhammadans*, other castes and sweepers.					
	Trangars of bán	Mussalmán Máchhís and barbers.	50	...	100	...	...
	Máhls of pachhai	Zamíndárs	76,200	...	1,36,500	...	...
	Máhls of munj						
	Mats of dib	Gugara (Muhammadans) ...	10	...	1,000	...	...
	Floor mats of pachhai ...	Zamíndárs generally ...	3,200	...			
	Stools and chairs of kána ...	Bahrúpiás, Sikhs	176	...	1,000	...	Wazírabad Tahsíl.
	Fans and brooms of khajúr leaves.	Muhammadan pakhigars ...	50	2 ánnas a day.	500	Rope making, 25 to 50 per cent. Basket making, 50 per cent. Stools and chairs, 25 per cent. Mats, &c., 25 per cent.	
	Baskets of pilchhi	Bahrúpiás, boatmen, butchers and others.	300		1,000		
	Chhajs and chicks of munj kána.	Sweepers, Gográs and Musallís.	710		300		
	Khurjis of bán (munj and cotton).	...	...		10		
	Paper	...	...		480 reams ...	...	Gujránwála Jail.
	Bán munj	...	...		...	...	
	Darries of bán munj ...	...	...		...	...	Gujránwála and Chenáwán Jails.
	Door mats of bán munj ...	...	...		...	...	
	Nets of bán munj	...	...		...	...	
	Sutri (san)	...	...		...	...	
	Chick of bamboo kána ...	...	...		...	...	
	Baskets of pilchhi	...	...		...	...	

APPENDIX No. II—*continued.*

District.	Work.	Caste.	Number employed.	Wages.	Outturn.	Profits.	Centres, &c.
					Rs.	Rs.	
Gujrat	Paper	Prisoners	...	Tát patti maker 2½ annas per day. Sutri maker 2 annas per diem.	...		
	Sutri of san	Labánás	2,640		12,650		
	Tát patti of san	Arorás	80		12,650		
		Jats	120				
	Bán munj	Gujars	100		12,650	...	Gujrát Jail, Tánda Killa, Sura Singh, Bádun, Hatka, Khari Kuánk, Bakhariáli, Buzargwál and Kohar.
		Chib	70				
	Ropes of sankokrá	Bahrúpiás	30		...		
	Munj bán	Mussallís	80		...		
		Bahrúpiás	20		...		
Siálkot	Paper	Jats	115	From one to 4 annas a day for different sorts of workers.	32,620	14,000	Rangpura, Nekapura, and Heranpura (suburbs of the town of Siálkot.)
		Awáns	175				
		Kashmírís	40				
		Darzís	4				
		Ulmás	6				
		Lohárs	30				
		Total	370				
		(JAT SUBDIVISIONS.)					
		Bhatti, Bhuta, Khokhar, Janjua, Her, Bájwa, Valána, Mungar, Goráya, Rájpúts.	...	...	...	...	...
	Mat making of dib grass and pachhi.	Gográs, Máchhís, Meghs, Batwáls — Muhammadans.	10	2 annas a day ...	1,600	50 per cent.	Bájwat tract of Siálkot Tahsíl.
		Gográs, Máchhís, Meghs, Batwáls — Hindús ...	150				
			120				
			60				
		Total	340				
	Fan making of palm leaves ...	Khokhars (Muhammadans)	16	2½ annas a day ...	960	50 per cent.	Town of Siálkot.

Basket making from pilchi and mulberry twigs.	Bahrúpia Sikhs	40	1½ anna to 2 annas a day.	10,500	...	Bahrúpgarh, Gulábgarh and Kishangarh in Daska Tahsíl, also in some villages in the Raya and Siálkot Tahsíls.
	Malha (Muhammadan) ...	220				
	Megh (Hindú)	150				
	Batwál	60				
	Total	470				
Chick making from bamboo and kána.	Kahárs	6	3 annas or 4 annas a day.	1,200	About 25 per cent.	
	Benbans	9				
	Total	15				
Munj ropes	Zamíndárs and others for their own use.	...	2 annas a day.	...	...	For most of the articles manufactured in the district, the town and cantonment bazars of Siálkot are the principal markets.
San rope	Ditto ditto.	...	2 annas a day.	...	...	
Rope and string of sankokrá	Zamíndárs	...	...	...	...	
Sirki making	Bahrúpia Sikhs	50	2 annas 6 pies a day	2,500	About 13 per cent.	Bahrúpgarh and Siálkot.
Munj matting	Prisoners	Average 33.	...	69	Rs. 18	Siálkot Jail and military prison.
Muhrás and máhls of pachhi	...	...	...	...	...	...
Paper made in the Siálkot Jail.	Prisoners	Average 150.	6 pies to 1 anna a day.	4,593	1,631	Siálkot Jail.
Bán munj	...	...	...	143	44	Ditto.

TABLE OF PRICES.

Worked or raw material.	Ráwalpindi.	Jhelum.	Shahpur.	Gujránwála.	Gujrát.	Siálkot.
Dhamman	Anna 1-4 to anna 1-7 per sér	...	....	...	...	...
Bhabar (grass)	3 pies per sér	...	...	...	...	...
Thick ropes of munj	...	8 sérs per rupee	...	...	...	...
Bán munj	...	4 „ „	...	7 to 11 sérs per rupee ...	...	Rs. 3-8-0 to Rs. 4 a maund.
Bán of bhabar	...	16 to 32 sérs per rupee ...	...	...	...	...
Patha (date leaves)	...	Rs. 2 per maund	...	...	...	Rs. 2 per maund.
Baskets of pilchi	...	Rs. 3 per hundred	...	...	...	9 pies to 1 anna each.
San	...	...	...	8 sérs per rupee	...	Rs. 4 to Rs. 5 per maund.
Munj	...	...	...	24 or 25 sérs per rupee ...	...	Rs. 1-8-0 to Rs. 2-8-0 per maund.
Pachhi	...	...	...	2 maunds per rupee	...	...
Sankokrá	...	...	...	20 sérs „	...	...
Dib	...	...	...	1 maund „	...	Annas 3 per maund.
Dib ropes and string	...	...	...	4 to 5 sérs „	...	...
Trangars	...	...	...	Re. 1 to Rs. 2 each	...	...
Máhl of pachhi	...	...	...	Re. 1 each	...	...
Máhl of munj	...	...	...	Rs. 1-8 each	...	...
Stools and chairs	...	...	...	Anna 1 to annas 12	...	...
Mats...	...	...	...	Annas 2 to annas 8 each ...	...	...
Mats of pachhi	...	...	...	5 pies to 1 anna each ...	...	...
Fans	...	...	...	3 pies to 2 annas „ ...	...	6 pies to 1 anna each.
Brooms	...	...	...	3 pies to 9 pies „ ...	...	...
Baskets	...	...	...	6 pies to annas 2 „ ...	...	...
Chhaj...	...	...	...	Annas 1-6 to annas 2 each ...	...	...
Chhánni (sieve)	...	...	...	Anna 1 to annas 2 „ ...	...	...
Khurjís	...	...	...	Rs. 1-8-0 to Rs. 3 each ...	...	...
Old tát or string of san for paper making.	...	...	...	...	...	Rs. 1-8-0 per Lahori maund.
Pilchi...	...	...	...	...	...	Annas 4 per maund.
Bamboos	...	...	...	...	...	Rs. 10 per hundred.
Káná reed	...	...	...	...	...	Annas 8 to Re. 1-4-0 per maund.
Tili or top of the reed	...	...	...	...	...	Rs. 1-4-0 per maund.
Paper, 1st quality	...	...	...	...	...	„ 11 or Rs. 8-10-0 per ream.
„ 2nd „	...	...	...	...	...	„ 7 or Rs. 5-12-0 per ream.
„ 3rd „	...	...	...	...	...	„ 4-8-0 per ream.
„ 4th „	...	...	...	...	...	„ 2-8-0 „
String of san	...	...	...	...	...	„ 8-0-0 to Rs. 8-8-0 per maund.
Chicks of káná reed	...	...	...	...	...	3 pies per square foot.
„ of bamboo	...	...	...	...	...	6 pies do.
Sirkís	...	...	...	...	...	3 to 6 annas per pair.
Waste paper...	...	...	...	...	...	Rs. 3-8-0 to Rs. 8 per maund.

TABLE OF EXPORTS AND IMPORTS AND RAW MATERIAL.

District.	Exports.			Imports.			Raw material used.
	Work or raw material.	Place.	Amount.	Work or raw material.	Place.	Amount.	
			Rs.				
Jhelum	Paper	Gujrát, Hazára and Ráwalpindi.	...	San	Siálkot	...	
				Bhabar	Jammu territory ...	In large quantities...	
Gujranwala	...	...	...	Khajúr (date palm leaves).	Mooltan	Rs. 500	Rs. 1,51,700 total raw material worked up.
				Pesháwari patha ...	Bannu and Pesháwar	„ 500	
				Mats of palm leaves	Mooltan	...	
				Mazri mats and fans	Pesháwar	„ 3,000	
				San	Jammu territory ...	„ 2,000	
				Bán munj	Meerut	„ 17,300	
				Sutri...	Jammu territory, Jasrota.	„ 5,000	
				„	Siálkot	„ 3,000	
Gujrat	Sutri	Shahpur, Jhelum and Ráwalpindi.	8,000	Baskets	Lahore	„ 100	Total raw material worked up Rs. 10,650.
Sialkot	Tát patti		1,600	San	Bajwat in Siálkot ...	...	
	...	...	...	...	...	...	Rs.
				Mats of palm leaves	Pesháwar	„ 2,000	Raw material used in paper making ... 11,100
				„ of dib ...	Bajwat	...	Dib and patha for mat making 7,000
				Fans...	Pesháwar	...	Pilchi for basket making 2,000
				Baskets of pilchi ...	Rámnagar and Wazírabad.	...	Bamboo and ána for chick making ... 700
				Palm leaves... ...	Mooltan and Pesháwar.	...	Munj for munj ropes 10,000
				Reed...	Lahore	...	San for san ropes ... 8,000
				English-made paper	Calcutta and Bombay.	„ 2,500	Tili and munj string for sirkís ... 1,200
				Cheap country-made paper.	Lucknow, Cawnpur and Calcutta.	„ 8,000	
	Paper	Amritsar, Umballa, Mooltan, Pesháwar, Ráwalpindi, Gujrát, Jhelum and Jhang.	20,000	Paper	Amritsar	„ 2,000	
				San sutli	Pathánkot, Shakargarh and Jammu territory.	„ 15,000	
				Bán munj	Shakargarh, Lahore, Ferozepore and Jammu territory.	„ 8,000	Cost of raw material used in paper making in the Sialkot Jail Rs. 2,962-5-0.
				Bán of patha, changair, dal or large baskets of patha.	Pesháwar	„ 5,000	
				Changair (flat baskets of bamboo), dal or large baskets of bamboo, pitár or covered baskets of bamboo, and small baskets of bamboo.	Jammu territory ...	„ 2,000	

APPENDIX No. II.

PESHAWAR DIVISION.

APPENDIX II.

TABLE FOR THE PESHAWAR DIVISION.

District.	Work.	Caste.	Number employed.	Wages.	Outturn.	Profits.	Centres, &c.
Peshawar	Waur	Chiefly Utman Khels Mohmands ...	Not large	...	Of articles made from mazri actually grown in the District Rs. 5,000.	6½ per cent.	Hashtnagar and Dáúdzai tahsíl. Peshawar city is famous for baskets and fans.
	Mats	...	...	...		...	
	Baskets...	...	...	...		...	
	Mazri ropes	...	...	...		...	
	Changer	...	...	...	...	...	
	Fans	...	...	...	...	...	
	Small Caps	...	...	...	...	...	
	Sandals	...	...	...	...	...	
	Ropes of wheat and barley straw	...	...	...	...	...	
	Paper	...	...	...	Rs. 3,669	Rs. 1,805	Jail.
	Paidans				...		
	Chatai				Rs. 219 For five months.	Rs. 105	
	Sweepers' brooms						
Hazára	San, Súti and ropes ...	...	...	No single man earns his living by these trades.	...	...	Mansehra Tahsíl.
	Ropes of Dhamman	...			...	...	
	Shoes of rice-straw ...	No special castes ...			...	...	
	Phindis (mats)	...			...	...	
	Mandhas, Parotas } baskets	...	...	...	...	...	
Kohát	Chaplis	...	...	...	20,000	...	
	Waur (ban)	...	...		15,000	...	
	Ropes of all sorts	...	...	annas 0-1-0 to	1,000	...	
	Trangar				2,000	12½ per cent.	
	Matting	Mussalman agriculturists	...	0-4-0.	15,000	...	
	Kashrai, Chhakor, Kurums, Kandurai, Pandorai } all baskets	Baskets are usually made by the women	...	...	5,000	...	
	Phandi (stool)	...	...	...			
	Paper	...	...	...	...	...	Jail.

TABLE OF EXPORTS, IMPORTS AND RAW MATERIAL.

Exports.				Imports.			Value of raw material used in the District.
District.	Work or raw Material.	Place.	Amount.	Work or raw Material.	Place.	Amount.	
			Rs.			Rs.	
Peshâwar	Articles made from Mazri ...	Hazára	...	Mazri and articles made from Mazri.	Khyber Hills and Independent Territory north and north-east of the District.	...	
		Pindi Division	...	..		...	
		Lahore	...	...	...	20,000	
		Amritsar	...	...	...	...	
Hazára		...	None	Chatai, fans and baskets	Peshâwar	Considerable	
Kohát	Chhakors	Other Provinces	Small	Waúr		500	
	Waúr		2,000	Matting		400	
	Raw Mazri		20,000	Chhakor	Tirah	1,500	
	Matting	Ráwalpindi, Jhelum, Shahpur and other Districts.	3,000	Baskets		1,000	
	Chhakor		1,000	Suzai		100	
	Baskets...		500	Kurumos		100	
From Miranzai	Raw Mazri	Punjab	Considerable	Ropes		180	
				Fans	Peshâwar	500	

TABLE OF PRICES.

Work or Raw material.	Pesháwar.	Hazára.	Kohát.
Raw Mazri	Re. 1-0-0 per maund.	...	1¼ maund per Rupee (dried).
String for one bed ...	Annas 0-3-0 to 0-8-0	...	...
Baskets.	„ 0-1-0 to 0-4-0	...	9 pies to annas 0-4-0 each.
Bed mats...	„ 0-2-0 to 0-3-0	...	...
San Sutri...	...	6 séra a Rupee	...
Dhamman Sutri...	...	8 séra a Rupee	...
Phindhis	...	Annas 0-2-0 to 0-4-0	...
Mandlas	...	„ 0-4-0 to 1 Rupee.	...
Parotas	...	„ 0-4-0 to 0-8-0	...
Mazri Sandals	...	...	3 pies each.
Superior Sandals...	...	...	Annas 0-4-0 each.
Waúr	...	...	Rs. 1-8-0 to 5 per maund.
Ropes	...	...	3 pies to annas 0-1-0 each (3 ft. × 6 ft. per Rupee.
Trangar	...	...	Annas 1 to 0-1-6 per pair
Matting	...	...	4 to 16 pieces (3 to 6) per Rupee
Chhaker	...	...	Annas 0-2-0 to 0-4-0 each.
Kurums	...	...	6 pies to annas 0-1-0 each.
Kandurai	...	...	Annas 0-4-0 to Re. 1-0-0 each.
Pandurai	...	...	„ 0-2-0 to Re. 1-0-0 each.
Phandi	...	...	6 pies to annas 0-1-0

APPENDIX NO. II.

DERAJAT DIVISION.

APPENDIX II.

TABLES FOR THE DERAJAT DIVISION.

District.	Work.	Caste.	Number employed.	Wages.	Outturn.	Profits.	Centres.
Bannu	Basket-making	Arorás	40	1 to 6 annas ...	...	Rs. 3-2-0 to 17 p. c.	
		Bhangi Khels	25				
		Mohanás	5				
	Mat-making— (*a*) date palm...	Patháns	33	9 pies to 4 annas ...	...	,, 3-2-0 p. c.	
	(*b*) dwarf palm	Mohánás	20	5 annas	...	,, 24 ,,	
	(*c*) reed ...	Katanas	25	6 pies to 3 annas...	...	,, 3-2-0 ,,	Bhangi Khel.
		Kánerás	25				
	Ván-making (munj)	Kátánás	25				
		Kánerás	25				
	,, dwarf palm	Bhangi Khels	15	1 to 4 annas ...	...	,, 12 ,,	
		Mohánas	5				
	Fans	Paráchás	20	2 to 6 annas ...	...	,, 6-4-0 ,,	
Dera Ismail Khan ...	Date and dwarf palm manufactures.	Mussalman Jats	148				
		Patháns	430				
		Biluchis	3				
		Arorás	39				
	Munj manufactures	Dárkháns	50				Bilot Panniwálá and Kiri Khisoré for Labánás and Kanerás.
		Jats	15				
		Labánás	323	2 to 4 annas a day.	...	10 p. c.	Tank for dwarf palm mats.
		Kátánás and Kanerás ...	191				Bakkar for chicks.
	Dib manufactures	Kánerás	38				Munj, dib, and mazri trades thriving.
		Kátánás	92				
		Manchrás	10				
	Pilchi baskets	Kátánás	51				
	Madar nets	Mohánás	125				
Muzaffargarh	Munj manufactures	Sikh Labánás	1,137	4 annas a day ...	...	Total profits estimated at Rs. 3,350 per annum.	All Labána bastis.
		Muhammadans	148				
	Date palm manufactures ...	Muhammadans	307	1-6 annas to 2 annas a day.	...		Sultanpur, Sitpur, Rampur, Khanpur, Bhutapur Latti Kahiri, and six other villages.
		Hindus	444				
		Chuhrás	160				
	Paper	Muhammadans	2	...	...	...	Sitpur.

Dera Gházi Khan ...	Making munj well ropes ...	Kurtánás, Chuhrás	221	3 annas to 4 annas...	Rs. 5,615	6 to 6¼ per cent.	Dera Gházi Khan, Rawan, Batil, Kot Chutta, Samin, Kotla Kaim, Sarangwala, Mad Maulvi, Kotla Ahmad, Buhar, Akilpur, Rajanpur, Vang, Nurpur, Nowsherah, Kot Tahir, Pir Adil, Jhok Hafiz Nur.
		Muhammadans					
		Labánás					
		Kurtánás					
	Making reed pattals	Muhammadans	132	3 annas to 5 annas...	„ 2,100		
		Chuhrás					
	Dib mats and ropes	Muhammadans	20	2-6 annas to 5 annas.	„ 2,500		
		Kurtánás					
	Ropes, trangars, and morhas of munj.	Muhammadans	192	3 annas to 5 annas...	„ 4,601		
		Labánás					
		Hindus					
		Máhtams					
	Making truha	Játs, Hindus	63	2-6 annas to 3 annas.	„ 775		
		Muhammadans					
		Mohánas					
	Dwarf palm manufactures ...	Muhammadans	99	3 annas to 5 annas...	„ 1,625		
		Hindus					

Work or raw material.	Bannu.	Dera Ismail Khan.	Muzaffargarh.	Dera Gházi Khan.
Dwarf palm leaves	(Fresh) 3 maunds per rupee.	.....	.....	12 bundles per rupee.
	(Dry) 2 „ per „	.....	.....	2 „ per „
Dib	(Dry) 2 „ per „	Rs. 2 to Rs. 3 per bullock-load ...	.....	
Khas	.....	„ 6 to „ 8 per maund.		
Raw munj	.....	„ 3 to „ 1 per „	.....	16 to 20 sérs a „
Tili	.....	„ 1 to „ 2 per „		
Date palm leaves	.....	.....	.....	16 bundles per „
Small baskets	6 pies to 1 anna	6 pies	2 annas each.	
Dwarf palm mats	(Large) 4 annas to Re. 1	12 annas each	1 anna to 4 annas each	8 to 10 mats per „
	(Small) 1-6 annas to 4 annas			
Dib mats	2 annas to 3 annas.			
Dwarf palm ván	2-6 annas to 8 annas for one charpoy...	1 anna per sér	.....	12 sérs per „
Dib ván	1 anna to 5 annas for one charpoy.			
Trangar	Rs. 3 each.	12 annas each	8 annas to 1 rupee each	8 annas to Re. 1 each.
Fans	(Small) 6 pies to 1-6 annas	.....	6 pies.	
	(Large) 8 annas.			
Bán munj	.....	6 annas and 4 annas per sér	Rs. 2 to Rs. 3 per maund	3 to 10 sérs a rupee.
Munj rope...	.....	9 annas for 8 yards	3 annas each	6 pies to 2 annas each.
Munj door mats	.....	Rs. 2-4 per square yard.		
Munj matting	.....	Rs. 1-2 or Rs. 1-5 per square yard.		
Changers (mazri)	.....	6 annas each.		
Mazri rope	.....	4 annas a sér	1 anna 6 pies to 4 annas each.	
Madar nets	.....	Rs. 2 to Rs. 4 each.		
Mahls	.....	.....	(Munj) Re. 1, (palm) 8 annas ...	4 annas each Rs. 3 for deep wells.
Reed pattals	.....	.....	.....	2 annas to 4 annas a yard.
Morhas	.....	.....	.....	4 annas each.

TABLE OF EXPORTS, IMPORTS AND RAW MATERIALS.

Exports.				Imports.			
District.	Work or raw material.	Place.	Amount.	Work or raw material.	Place.	Amount.	Value of raw material used in the district.
			Rs.			Maunds.	
Bannu	Munj	Dera Ismail Khan	1,000	Dwarf palm... ...	From across the border.	6,385	
						Rs.	
Dera Ismail Khan ...	Munj and san rope	Beyond the border by Povindáhs.	700	Munj and dib ...	Bannu	1,000	Local outturn of dib, Rs. 5,000.
				Gunny-bags ...	Bengal	1,000	
				Ditto	Karáchi	2,000	
				Mazri ropes	Kanigoram ...	1,000	
				,, baskets ...		3,000	
				,, mats		3,000	
				Mazri baskets, fans, and mats.	Pesháwar	Small.	
				Date palm manufactures.	Isa Khel	1,000	
				Munj ropes	Mianwali	500	
				Tat and san ropes ...	Amritsar	1,500	
Muzaffargarh	Bán munj	Sukkur	1,500	Paper	Lucknow	500	Raw munj, Rs. 4,862.
				Gunny-bags... ...	Lahore	2,500	Palm leaves ,, 500.
					Amritsar		
Dera Gházi Khan ...	Fans	Mooltan	500	San	Sukkur	250	Total worked up in the district, Rs. 5,900.
	Baskets	Muzaffargarh	100	Dwarf palm... ...	Sulimán Hills ...	350	
	Dib mats	Báháwalpur	20	Gunny-bags... ...	Sukkur and Karáchi	11,200	
				San ban	Sukkur	50	
				Bán munj	From other districts in the Punjab.	1,557	
				Trangar and ropes...		100	
				Changers		1,000	
				Guuny-bags... ...		6,362	
				San ban		555	

APPENDIX III.

List of names of occupations of persons employed in fibrous manufactures (vide *Punjab Census* 1881).

No.	Class of occupation (*vide* Punjab census 1881).	Name of Division.	Particulars.
1	No. 195.—Dealers in raw fibres.	Delhi Division	Munj bechna, san bechna, munj farosh, munj ka beopár, munj nikálna, sani bechna (Gurgáon); sani farosh (Umballa).
2		Jullundur Division	Sani farosh, sani bechna, beopár san ka, munj farosh, munj bechna (Ferozepore).
3		Lahore Division	Munj bechna (Amritsar, Mooltan); munj ka beopár (Lahore, Mooltan); munj farosh (Lahore); san bechna (Mooltan).
4		Ráwalpindi Division	Munj bechna (Ráwalpindi, Siálkot, Shahpur); munj farosh (Ráwalpindi, Siálkot); munj vechna (Shahpur, Siálkot); sani vechna (Shahpur); san farosh, munj ka beopár, san vechna or bechna, beopár munj or san (Siálkot).
5		Pesháwar Division	None given.
6		Deraját Division	
1	No. 196.—Rope makers, dealers in rope.	Delhi Division	Rassi batna (Delhi, Umballa and Gurgáon); bán batna (Delhi and Gurgáon); bán wa munj bechna (Delhi); wan wa Rassi bechna (Delhi and Gurgáon); chhinka banána, indwi chhinka bechna (Delhi); rassi bechna (Delhi and Gurgáon); indwi banána (Delhi and Hissar); chhika banana (Delhi); chhika banána wa indwi banána, bán watna (Hissár); wan watna, bhabar watna (Umballa); bán bechna (Umbálla, Gurgáon); sutli bechna, bán munj bechna, rassi melna, las banána, gatta wa necha banána, jeori bantna, jeori bechna, rassi bántna, munj bántna, jeora bántna, sani bántna, san bántna, bán munj bántna (Gurgáon.)
2		Jullundur Division	Wán watna, dukán tangaryán, sutli bátna, munj bátna, dukán san, beopár san, bán bechna (Jullundur); rassi-bat, rassi bechna, bán batna, chhinka banána and bechna, sirki or pukhi, banána (Ferozepore); rassi batna (Jullundur and Ferozepore).
3		Lahore Division	Wán watna, (Amritsar, Lahore and Mooltan); kohára, beopár rassa, san katna (Amritsar); rassi watna, bán farosh, chhikka banána (Lahore); rassan wa máhl banána, wán watna wa kapra síná, wán ká beopar, Rassan bechna, Rassi bechna, Munj wán watna, bán batnewála, wán wat, munj kátna, bán banána, labána, wán wa Rassá bechná (Mooltan). Ban bechná (Amritsar, Mooltan) munj nikálna (Lahore, Mooltan).
4		Ráwalpindi Division	Barya wa wán bechna, sutri kátna, dharni kátna, wán bechna, vadr kátna, trangar banána, rassa wat, rassa farosh, bán, banánewála, wán farosh, sutli ban ánewála, sutli farosh (Ráwalpindi); jat káta, (Gujránwála); chhikar or takri banána chhikar wechna, patha, phúr or phúri, pakha, pakhiwárá, (Shahpur); sutri vatná, rasá vatna, rassi vatna, laj vatna san kátna, munj kadhna, tandúli kadhna, wán wa munj vechna, wán wa rassi vechna, wán vechna, bán vatna, bán bechna, jhabu vatna (Siálkot), wán watna (Siálkot, Ráwalpindi, Shahpur); sutli kátna (Ráwalpindi, Siálkot).
5		Pesháwar Division	Rassi watna, bán banána, rassanbáf (Pesháwar).
6		Deraját Division	Sani kátnewála, rasansáz, máhl watna, bhábar banána, kúndr bechna, wán kúndr banáná, rasan doriwat, pinniwat, rassiwat, bán watna, wán nikálna, munj kátna, rassi batna, wán banána, wán wa rassan banána, pattal wa rassan banána (Deraját).

APPENDIX III—*concluded.*

No.	Class of occupation (*vide* Punjab census 1881).	Name of Division.	Particulars.
1	No. 197.—Hemp matting, bag-makers, dealers.	Delhi Division	Patti bunna, ládha banána, bori banána, tát bechna, tát bechna wa banána, patti tát-patti bunna wa ládha, tát patti, banána (Delhi); bori siná (Hissár); bori bunna (Delhi and Hissár); tát watna, sani ki patti banána, san ki patti banána (Umballa).
2		Jullundur Division	Patri bunna, guthalyán bunna, bora bunna, patti bunna, tarapri bunna, bora banána (Jullundur); tát-báf, tát-pati banána, trapur banána, bori sina ya banána (Ferozepore).
3		Lahore Division	Tappar, tát banána, tát farosh wa san (Amritsar); bori bechna (Lahore); pallah bándhna, bori sína, bora bunta hai (Mooltan); tát bechna (Lahore and Mooltan).
4		Ráwalpindi Division ...	Patti, tát, bori, tapri, tapar, trapar, bora, trangar, chikka banána and bechna, or vechna (Siálkot); Boriya báf, tát-dozi karna (Ráwalpindi).
5		Pesháwar Division	Gazlíchi yáne trangar banána, gazlíchi banána, trangar banána, tát bunna, ghazlicha banána (Pesháwar).
6		Deraját Division	Bori báf (Deraját).
1	No. 254.—Workers and dealers in bamboo.	Delhi Division	Báns wa balli bechna, báns bechna, chik banána (Delhi); báns phor, báns ki patyári banána (Umballa); chilman banána (Delhi and Umballa).
2		Jullundur Division	Beopár khir kána, báns bechna, bartan báns ke banána, chhábe banána, chhánni banána, chhánni wa chhába banána, pinjráh chhabra banána, chhiku wa chhabra banána, chhikku changer banána (Jullundur); Bánswála, báns bechnewála, chikhán banánewala, chhába banánewála or pinjráh (Ferozepore).
3		Lahore Division	Bánsi bartan banána (Amritsar); beopar láwa yáne balchi, báns bechna (Lahore); kána bechna, chila kamánd, kána chhilna, chik banána (Mooltan).
4		Ráwalpindi Division	Chik banána (Ráwalpindi); sirki kánáwála (Gujránwála).
5		Pesháwar Division	Chik banána (Pesháwar).
6		Deraját Division	Khirki banána, chik farosh, kána kátna, pattal bechna, chikwale (Deraját).
	No. 256.—Basket-makers, sellers.	*General*	Tokra banána, tokri banána.
1		Delhi Division	Patyári banána, tokri bechna, chhába bechna, tokaryán banáná (Delhi).
2		Jullundur Division	Chikku, chhába bechna (Jullundur); tokra banána ya bechna (Ferozepore).
3		Lahore Division	Chhábri banána, changer wa tokra banána (Amritsar); khar khara, chhába farosh, kákara (Lahore); kbarora bándhna máhlen wa tokri bechna, tokre bándhna (Mooltan).
4		Ráwalpindi Division... ...	Khora banána, pitári banána, toang banána, chhábri banána, phachhi sáz, tokri sáz, phundi sáz, mura sáz (Ráwalpindi).
5		Pesháwar Division	Changer banána, tokra bechna, pachhi banána (Pesháwar).
6		Deraját Division	Tokre sázi, changer banána, patyár báf, khára banána, chhába banána, tokri wa khári sáz, changer farosh, tokra-farosh tokri-farosh, chhába bechna (Deraját).
	No. 260.—Paper dealers.	*General*	Kághaz bechna.
1		Delhi Division	Kághaz farosh (Hissár).
2		Jullundur Division	Kághaz bechnewála (Ferozepore).
3		Lahore Division	*Nil.*
4		Ráwalpindi Division	Kághaz farosh, kághaz ka beopár (Siálkot).
5		Pesháwar Division	Kághaz farosh (Pesháwar).
6		Deraját Division	Beopár panna yáne Kághaz (Deraját).

APPENDIX No. IV.

Note on the manufacture of paper in the Jails of the Punjab.

THE manufacture of country paper has, for many years past, been extensively carried on in the Jails of the Punjab. The materials used in its production are abundant and easily procurable in almost every district of the Province, and the various processes to which the materials are subjected are of the simplest character. Paper-making has thus afforded us the means of employing on suitable work a large number of our able-bodied prisoners sentenced to rigorous imprisonment—a matter of no little importance—inasmuch as aimless labour (the tread-mill, crank, &c.) has never been allowed in our Jails, and it is only very recently that the employment of prisoners extramurally on large public works has been introduced.

2. Various fibres have been used in the manufacture of native paper. The chief are the following :—The bark of the hemp plant (*Crotolaria juncea*) ; flax fibre ; the leaves of munj grass (*Saccharum munja*) ; the bark of the madár plant (*Calotropis gigantea*) ; date tree leaves (*Phoenix sylvestris*) ; plantain leaves (*Musa paradisiaca*) ; the root of the dhák tree (*Butea frondosa*) ; leaves of the aloe plant, the inner bark of various species of *Daphne* and *Desmodium*, &c.

But the most commonly used substance is hemp bark. Indeed it may be said that all the others have been only tried experimentally in particular Jails, and that the disadvantages attending their use have led to their being abandoned in favour of hemp fibre.

Munj grass grows most abundantly and luxuriantly in the Punjab along the banks of canals, and canal cuts, and by the sides of rivers, and an excellent paper can be manufactured out of its leaves ; but it is exceedingly hard, and it was found that it could not be worked up into a proper pulp by the rude implements we have in our Jails without great expenditure of labour and considerable cost.

3. Hemp fibre is generally not converted into paper till it has been manufactured into, and used as ropes, *tát* (sacking), &c. ; these, when they have become useless for the purposes for which they were originally made, are worked up by the processes about to be described into paper. And usually the paper does not consist of hemp fibre alone, but with it is mixed a certain proportion of waste paper. A large supply of the latter is obtained from the accumulated stock of useless records in Government Offices.

4. I shall now describe *seriatim* the various processes employed in making country paper in the Jails of the Province, and it may be remarked that the processes are virtually the same when paper is made by free labour :—

(*a*) The old ropes or *tát* (hemp sacking) are cut up into pieces about an inch square with a hatchet. (See Sketch No. 1.)

The fibres of these small pieces are then separated with the hand as far as possible ; and the whole is shaken and freed from dust, &c.

(*b*) The cut up material is then moistened with water, and is pounded by means of a *jhandra* (or stamper). This is really a lever of the most elementary kind, and consists of a heavy beam of wood working on a pivot, the long end of which is fitted with a heavy cylindrical block of wood tipped with a blunt piece of iron. The long loaded end of the beam works in a trough about 2½ feet deep and three feet square, in the floor of which is sunk a big roundish boulder, usually quartz. Three men work each *jhandra* (or stamper) : one sits in the trough and places small quantities of the fibre on the stone, to be crushed by being pressed between it and the stamper ; two others, placing a foot each on the short arm of the lever, press it down and raise the loaded end ; then, removing their feet, they allow it to fall, and by its weight it crushes and tears the fibre which has been placed on the stone below. (*Vide* Sketch No. 2.)

(*c*) The pounded material is then well washed by being placed a little at a time in a stout piece of cloth tied round the waists of two men, who move the material up and down and from side to side, while a small stream of water is made to fall on it. (*Vide* Sketch No. 3.)

(*d*) The pounded and washed material is then treated in one of two ways :—

One may be called the putrefactive, the other the boiling process.

If the former is adopted, the pounded and washed material is moistened and mixed with *sajji* (impure carbonate of soda) and *choona* (lime), both of which have been previously finely powdered. The quantities of *sajji* and lime which are used vary: the average may be put down as lime 1 part, *sajji* 4 parts, and washed material 8 parts.

The materials well mixed together in a slightly moist state are then placed on a clean platform, generally constructed of burnt bricks and mortar, in small heaps about a foot high and three feet in diameter, and are exposed to the sun and air for a period varying from three to six months. The result is that the fibres are separated, softened and bleached.

The other is the boiling process. This has only been introduced of late years.

In this process the *sajji* and lime are dissolved or mixed with a quantity of water in a large iron vessel, and in this the cut, pounded and washed hempen rope or *tát* is boiled for 24 hours.

This of course answers the same purpose as the putrefactive process, but it is somewhat more expensive on account of the cost of fuel.

(*e*) After being boiled or exposed to the sun in heaps as above described, the material is again pounded by the stamper as described under (*b*); and is again washed till all impurities left by the impure carbonate of soda and by the lime are removed.

On the thoroughness with which the pounding is performed will depend the fineness of texture of the paper; while on the manner in which the bleaching and washing are done will depend the colour.

(*f*) The material now pounded, bleached and washed is mixed with a certain quantity of water in an earthen or iron vessel, and is converted into a pulp by being pounded with prisoners' feet. (*Vide* Sketch No. 4.)

It is now fit for use, but if not required at once it may have the water squeezed out of it, and be made into round cakes, which can be kept for almost any length of time. Call this pulp A.

(*g*) A quantity of waste paper is now made into a pulp by being mixed with a little water and pounded as described under (*f*).

Stains of country ink are more easily removed than those of English ink. Waste paper consisting of Vernacular records is, therefore, preferred.

After the paper has been converted into a pulp, the ink stains are removed by mixing it with *sajji* and water (about 1 part *sajji* to 20 water), and then washing well with clean water. Call this pulp B.

(*h*) Paper is now made from a mixture of A and B. The proportions used are very various; they may be 3 of A to 1 of B, or 1 of A to 3 of B. The greater the quantity of A, the stronger and less friable will be the paper.

(*i*) The mixture of A and B, whatever may be the proportions of each, is now put into a tank nearly full of clean water. The usual dimensions of the tank are four feet deep, and four feet square at the top and bottom. The quantity of A and B required for each such tank is about 12 sérs (24 pounds). The paper pulp is thoroughly mixed with the water, by the whole being violently stirred up by means of a stick.

(*l*) The process of taking out sheets of paper now commences.

The implement used is a fine screen or strainer (Vernacular *nir*), made of the fine flowering stalks of munj grass. This is stretched on a frame of wood. The size of the sheet of paper will of course be that of the screen.

The pulp having been thoroughly mixed with the water in the tank, the vatman sits down on the edge of the tank, and dipping his screen (*nir*) into the water places it first horizontally, and then brings it by a wavy motion to the surface, and in doing so catches on it a fine layer of paper pulp, which is placed on a board. (*Vide* Sketch No. 5.)

Successive layers are taken out of the tank and placed one over the other. When a considerable pile has been formed, a board is placed on the top of it, and a portion of the water is squeezed out by pressure.

If a large quantity of B (waste paper) is used, it is necessary to place a fine piece of muslin between every two layers of paper; otherwise they will not separate from one another without breaking.

(*m*) The sheets are then carefully separated from one another and spread out to dry upon a smooth wall specially prepared for the purpose. In both operations there is used a brush made of munj grass, which has been beaten till it is quite soft.

(*n*) When dry, the irregularities are rubbed off the surfaces of the sheets by means of a rough pumice stone (*jhâwa*).

The sheets are then sized on both sides; the size used in jails being prepared from white wheat. It is applied to both surfaces of each sheet by means of a bit of cloth spread on the hand.

(*o*) The paper is then polished by the hand, the implements for performing the operation being a piece of smooth flint set in a piece of sun-dried tenacious clay (*ghota*) and a curved board (*patra*). Sitting behind the curved board, and placing a sheet of paper along its concave surface, the prisoner cleverly rubs the smooth surface of the flint along the whole length or breadth of the sheet. Both surfaces of each sheet undergo this process. (*Vide* Sketch No. 6.)

Attempts to polish country paper by rollers have been made, but have proved unsuccessful. It was found that, owing probably to the unevenness of the texture, the paper was torn to pieces.

Of all the processes employed in the manufacture of paper, this one affords the hardest description of labour. When first employed on the work, an able-bodied prisoner can only polish a few sheets a day, and those very imperfectly; but after he has been at the work for a month, he can turn out four quires easily enough, the ordinary size of the sheet being 24 inches by 20 inches.

(*p*) It only now remains to dress the sheets. This is usually done by fixing a number of sheets in a screw press and cutting the edges by means of a curved knife.

In some of the larger jails we have regular paper-cutting machines of European make.

(*q*) The sheets are then generally doubled twice on themselves and arranged in quires of 24 sheets (*dastás*), of which usually 11 are reckoned a *gadi*, which is the commercial unit used throughout the country in all transactions relating to country paper.

5. With regard to the size of each sheet there is no fixed standard. A very common size is 24 inches by 20 inches, and of course the weight varies very greatly, not only according to the size of the sheets, but according to the thickness of the paper.

6. I have said under 4 (*h*) that the proportions in which old ropes, &c., and waste paper are combined in the manufacture of paper are very variable. I must give somewhat fuller details on this point, because it has a bearing not only on the cost of the raw materials expended, but on the labour required for working them up.

The best description of waste paper costs Rs. 6 to Rs. 8 a maund (80 lbs.), while the best old ropes or *tát* can be procured for less than Rs. 3 a maund. If much waste paper of good quality, therefore, is used, it raises the cost of the manufactured paper.

On the other hand, waste paper involves comparatively little labour in working up. There is no need of the laborious processes of cutting and breaking it up by the stamper (*jhandra*), or of exposing it to the sun and air for months, or of boiling it. In using it then, there is a very great saving of labour.

And the polishing of such paper is very much easier than that of paper made from ropes and *tát* (hemp sacking) on account of the softness of the texture.

Paper is sometimes made of waste paper alone, but it is unfit for permanent records, being very friable and easily made limp by damp weather.

7. The total quantity of paper manufactured in all the jails of the Province during the financial year from 1st April 1884 to 1st April 1885 was 20,831 *gadis* of 11 quires each. The value of the paper was Rs. 86,328, and the total cost of the raw materials used in its manufacture was Rs. 43,264-1-3. The net profit, therefore, was Rs. 43,064-4-3. The number of working days in the year was 311, and the average number of prisoners employed daily was 1,692, so that the annual value of each prisoner's labour was Rs. 25-7-3, the daily average earnings of each 1 anna 3·7 pie.

The number of *gadis* (of 11 quires each) turned out by each prisoner was $12\frac{1}{3}$; or, to put it in another way, it took 25 prisoners working one day to manufacture one *gadi* of paper.

8. The finest description of paper made in jails is called "Siálkoti," no doubt from the fact that for years past the best paper made by free labour in this part of the country has been manufactured at Siálkot. Usually the sheets are larger than those of ordinary country paper, a common size being 24" × 27," and it sells at from Rs. 7 to Rs. 10, according to quality. It is made of the best materials in the way already described, and consists of 3 or 4 parts of hemp (old rope) to 1 of waste paper. It is thick, tough and durable, the weight of a *gadi* of eleven quires being about 12 or 13 sérs (24 or 26 lbs.). Such paper is used almost entirely for permanent records.

Of ordinary jail-made paper, the best sorts sell at about Rs. 6 a *gadi* of eleven quires, the inferior sorts at Rs. 3-8 and Rs. 2-12 a *gadi*.

The rates are generally higher than those at which country-made paper can be procured in the open market. This is in accordance with orders of Government, under which it is laid down that convict labour is not to be allowed to compete unduly with free labour.

9. The paper manufactured in jails is supplied almost entirely to Government offices. No *cash* is passed, but a book credit is given to the Jail Department for the value of the paper.

It is used for vernacular correspondence or lithographic printing; for the former especially it is better adapted than mill-made paper.

At the same time, the cost of even inferior descriptions of country paper is greater than that of fairly good mill-made paper; and the time cannot be far distant when the latter will come into universal use, and the manufacture of country paper by the rude and primitive processes I have described will be a thing of the past.

R. GRAY,

Inspector-General of Prisons, Punjab.

MONOGRAPH

ON THE

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OF THE

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1890-91.

Published by Authority.

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1892.

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No. 473.

FROM

R. G. THOMSON, ESQUIRE,
Revenue Secretary to Government,
Punjab and its Dependencies,

To

THE JUNIOR SECRETARY TO THE
FINANCIAL COMMISSIONER,
PUNJAB.

Dated Lahore, 10th August 1892.

Revenue and Agriculture.
General.

SIR,

I AM directed to acknowledge the receipt of your letter No. 442, dated the 9th July 1892, submitting the Monograph on Pottery and Glass Manufacture in the Punjab by Mr. C. J. Hallifax, C. S., and to say that Mr. Hallifax has compiled a number of interesting facts with great industry and care.

2. I am to add that the Report seems to have been badly treated both by the printer and the proof corrector.

I have, &c.,
R. G. THOMSON,
Revenue Secretary to Government, Punjab.

Punjab Government Press, Lahore—15-9-92—560.

No. 442.

FROM

A. J. GRANT, ESQUIRE,

Junior Secretary to the Financial Commissioner,

Punjab,

To

E. B. STEEDMAN, ESQUIRE,

Offg. Revenue Secretary to Government, Punjab.

Dated 9th July 1892.

SIR,

I AM directed to submit 350 copies of a Monograph on Pottery and Glass Manufacture in the Punjab compiled by Mr. C. J. Hallifax, C. S. The Financial Commissioners' instructions were contained in Circular letters No. 534 C. S. of 23rd January 1891 and No. 3373 of 23rd May 1891, and I am to say that Mr. Elsmie thinks that Mr. Hallifax has succeeded in embodying all the information at his command in a clear and useful form on the lines suggested in those letters. By far the best of the District Reports, in the opinion of Mr. Hallifax, is that for Siálkot, which was drawn up by Mr. Greenwood, Secretary of the Municipal Committee. After that comes the report for Hissar (prepared by Sardár Charat Singh), which was good.

2. The Monograph opens with a description of the various kinds of clay found in the Punjab and of the customary admixtures of certain substances such as salt, sand and coloured earths to render the clay more suitable to the purpose for which it is required. Paragraph 14 contains a description of the two kinds of potter's wheel which alone are found in the Punjab. The *râm chak* or single wheel is the lightest and commonest, but has the disadvantage of necessitating frequent stoppages of work, as it must be re-spun with the hands whenever it begins to slow down. The *chak pakri* or double wheel is much heavier, and cannot easily be moved, but being turned by the feet it allows of better and more rapid work, and is adapted for the making of larger articles. The kilns for firing the pottery (paragraph 17) are generally very simple in construction.

Mr. Hallifax then describes (paragraphs 21 *et seq.*) the common domestic utensils and other articles of rough pottery such as huqqas, lotas, chirágs, &c., and remarks upon their shapes, sizes, uses and price. A brief mention is made in paragraph 22 of the Jhajjar pottery of Rohtak and the '*kagazi* pottery.' Then paragraphs 23 *et seq.* deal with the caste, customs and prospects of the potter. The 'Kumhárs' are apparently a real caste consisting of both Hindús and Musalmáns—the former principally in the south-eastern districts, the latter on the frontier—and Mr. Hallifax estimates that only about one-third or one-fourth of the whole caste actually work as potters, and that of those who do, all or nearly all are obliged to supplement that profession with some other work during the four months of the rainy season. The potters are divided into two classes,—the town potter, who is paid by the work he turns out, and the village potter, who receives his *haq sep* calculated in various ways and by various standards. The prospects of the trade do not appear to be flourishing, as a " demand exists only for objects of utility, and fineness of work does not pay ; " while in towns the native pottery is being ousted to some extent by imported china ware. There are some interesting remarks in paragraph 32 about wheel worship and the worship of 'Máta Devi' and the way in which the potter is affected by these superstitions.

3. Under the heading of Art Pottery the ware of Mooltan and Pesháwar is discussed. There are said to be only five persons engaged in the latter work, and that of Mooltan is deteriorating. The number of workmen is small, and they are abandoning native patterns and the fine old blue color for bad copies of European designs and less effective browns and greens. Ordinary native ware is seldom glazed, and it seems probable that what little glazing is done will soon die out, as the profits are very low and the better classes who can afford to pay higher prices prefer to buy imported china ware.

4. The manufacture of earthenware toys (khilauna) is treated under a separate heading. Their sale is restricted to the occasions of certain Hindu festivals, and they are made by ordinary potters to meet the demands of these fairs. They are moulded either in burnt clay moulds or on a light wheel, and are of most fantastic shapes and colouring. It is worthy of notice that the import of cheap European wooden toys, chiefly German, is increasing, and may bring about a restriction of the native industry.

5. The manufacture of glass is almost confined to the making of glass bangles (chúrís), which are sold very cheap and are in great requisition everywhere. Paragraph 74 gives an account of some of the customs and superstitions regarding the wearing of these ornaments. Other glass articles are made very sparingly and consist of looking glasses, lamp-chimneys, bottles, glasses, scent phials, etc. It is improbable that the manufacture of glass by native methods will ever be largely extended. In the large towns the competition of cheap imported glass is strongly felt, and in smaller places the necessarily small scale of production renders the cost of making everything except *chúrís* almost prohibitive.

I have, &c.,

A. J. GRANT,

Junior Secretary to the Financial Commissioner,

Punjab.

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MONOGRAPH

ON THE

POTTERY AND GLASS INDUSTRIES

OF THE

PUNJAB.

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1. Subject.—The industries selected as the subject of the Monograph for 1891 are those connected with pottery and glass. They are considered under three heads, *viz.*: I, Rude Pottery; II, Glazed Pottery, Art Work and Toys; III, Glass.

The glass manufacture is practically confined to the making of "kánch chúrís," or bangles, and is limited in extent. The manufacture of toys is not a regular industry, but is carried on spasmodically to meet the irregular demands which arise chiefly during Hindu "melás." The forms of many common and unglazed vessels, such as "surábís" and "kúzás," are certainly artistic, but work which can be classified under the head of Art Pottery, as combining artistic design and colour with artistic form, exists in Mooltan and Pesháwar alone, and gives employment to a very small number of workmen. Delhi "porcelain" is also noticed under this head. The glazing of earthenware for domestic use is not often practised. Hence the most important branch of the industries under report is the manufacture of rude and unglazed vessels, being, as it is, essential to the domestic comfort of the people and of considerable importance to agriculture in supplying the customary means of irrigation.

I.—Rude Pottery.

2. Clay used.—The Punjab potter uses the simplest means and instruments in his trade. He prefers to avail himself of the materials that lie nearest to his hand without going further afield in search of what may answer his purpose better. Thus in the matter of clay, the potter uses the variety that is found in his immediate neighbourhood. The District reports enable me to give no exact description of the character and quality of the clays of the Province, except in reference to Hazára, for which District Mr. Middlemiss, of the Geological Survey, has kindly furnished the following note:—

3. Note on Hazára clays.—"The clays of the Hazára District may be roughly divided up as follows:—

Age.		
Recent.	1.	Inferior porcelain clay and semi-decomposed felspar found in the vicinity of the granite masses in Upper Hazára.
	2.	Light reddish-brown clay, associated with loams and sands, which go to form the alluvium of the present larger river beds.
Tertiary.	3.	Bright red clays, associated with the soft sandstone of the "Murree beds" found along the southern border of the hills.
	4.	A few grey soft shales or clays.
Juranic.	5.	The jet black "Spiti shale" of this age is found at the surface as a black clay, or may be reconverted into a black clay by mixing with water.

On the whole, the clays of Hazára are poor, unless the reported porcelain clays of Upper Hazára turn out to be better than they seem (see *Gazetteer*, Hazára, paragraph 12). Under (2) perhaps come those most useful for rough pottery, though (5) doubtless would be better if there were enough of it; (2), (3) and (4) are, however, all more or less loamy in character, owing to sandy admixture, which unfits them for finer work." From the district report it appears that the red clays are practically recognised as the most useful.

4. Clay generally found.—As in Hazára, so throughout the Province, the clays found in each district are of two or three kinds, coloured in various shades of grey and red. Clay described as white or yellow is not common, and

is found only in the Deraját and Pesháwar Divisions, and in the districts of Jhang, Karnál and Sháhpur (near the Salt Range.) Pesháwar is the only district where the pottery called by Mr. Baden-Powell "the pale yellow ware of the Deraját" obtains more extensively than the red ware, for in the other districts of the Deraját and Pesháwar Divisions red or so-called black clay is used more commonly than yellow. In Karnál, the yellow clay is in general use except for cooking-pots; and Mr. Baden-Powell also notices Mooltan as a district where white pottery is made. The common name for clay is "chikni mitti," and the different varieties are roughly distinguished by their colours as kálí, lál or pílí. In the Deraját, the light red clay is called "kappar," and a clay called "gusúr" is found, which is said to be "of a brown and greenish colour."

5. Characteristics of clay most commonly used.—The same clay is used for rough pottery and for art work: the varieties chiefly used are the light red, and the so-called "kálí mitti," which is not black but dark grey in colour, really black clay being very rare. The light red clay absorbs little water, is light, silicious, easy to manipulate, and capable of being made very smooth, and burns to a light red colour, while the "kálí mitti" is ductile and tenacious, and burns to a dark brick red. The light clay is preferred for the manufacture of small vessels and of those made in moulds or simply turned on the wheel without further manipulation after they are "thrown" in their "green" state, *i. e.*, before they are burnt. It is easier to work, and burns a better colour than the black clay, but the latter is preferred if the vessel to be made is large and has to be worked up after leaving the wheel, and also for vessels, such as cooking-pots, which are subjected to heat and hard wear.

6. Clay, where obtained.—The red clay is obtained one or two feet below the surface of the ground. In sandy tracts it is occasionally dug out to the depth of four feet, and in such tracts the pits dug for the supply of brick-clay are resorted to by the potter. The black clay is as easy to obtain as the red, for it is found wherever there is a village pond or a marsh, and also in depressions in the level of the country in which water stands for any length of time. In Kángra the clay deposits, which are known as "mattiáni," are situated in alluvial hill-sides, and the banks of the Indus and other rivers and streams also yield clay—with an exception in the case of the Jumna. Spots which are known to yield clay exist in almost every village, and the potter has no difficulty in getting what he wants. He digs it up himself and uses his donkeys to transport it to his house. City potters may, like their village brethren, get their own clay, or they may buy it for about 2 annas per donkey-load (about one maund). Even in places like Ferozepore, where it is said to be somewhat difficult to obtain, good clay is got within three or four miles of the city, and can be bought for four to eight annas per cart-load, according to quality. The only exception mentioned in the reports to the rule that potters do not go outside their own districts for clay, are the small import into Kohát of red clay from the Afridí Pass country for use in making the bottoms of cooking-pots, and the import into the same district of clay from Kalábagh in Bannu.

7. Cost of clay.—Clay generally costs nothing, as it is obtained from uncultivated lands which are "shámilát deh," from which the potter, as a village "kamín," is allowed to take it without payment. And even if a man goes for clay to a village in which he is not a "kamín" no charge is ordinarily made. The only districts in which payment is the rule are Karnál and Kángra, in which the "kumhár" is not always regarded as a "sepi." For clay taken from common land, the potter in Kángra has to make a special contribution to the village fund, and in Karnál he has to supply, in rotation with his fellow potters, all the vessels required by Government officials on tour. Of course if the "kumhár" prefers to go for clay to land in the possession of a "zamíndár," he has to pay for it, and the clay so obtained is sometimes so good as to make it worth his while. The price paid varies; most often all the vessels required by the owner of the land are supplied free of cost, sometimes a sum of Re. 1 or Rs. 2 in cash is paid per annum, and in Mooltan the charge is based on the area of the land dug up, Rs. 2 being paid annually for each marla.

8. Coloured earths, "Banni," &c.—Besides the clay of which the vessel is formed, coloured earths are the only other materials used in rude pottery work. These cannot be moulded, and they are used simply as colouring

matter. That most commonly used is red, but black and white earth is also procured in the Salt Range. The red earth is usually found in a few spots in each district, and is known as "banni," "panni" or "geru" (red ochre). This colouring matter costs the potter very little. It can be bought for 16 sérs per rupee; but usually one potter makes the journey to the spot where the earth is found, and brings back on his donkeys as much as he and his fellow potters in the neighbourhood require, and as it is very sparingly used a supply thus procured lasts a long time. The "banni" is dissolved in water, and the wash is applied with a cloth to the ware before baking. If "banni" is not available, the colour is got from "surkhí" or the powdered pieces of old crockery. In Amritsar oxide of lead is applied, and in Dera Ismail Khan an earth, called "sáwí mitti," is used, which is got from the Shiráni hills and costs Re 1 per maund.

9. **Preparation of clay.**—To prepare clay for use, it is first dried and then thoroughly pounded with a wooden pounder, called "munglí," and the powder is sifted through a sieve ("channa" or "jhanna"). The fine powder thus obtained is put aside, and the coarse clay left in the sieve is put into water and dissolved. The powder is then added to the liquid, and the whole is slightly dried and kneaded with the hands. These processes are performed more or less carefully according to the manner in which each individual works, but as a rule little care seems to be taken over them; and though two or three days may well be spent in pounding and sifting the clay, and three or four days more in kneading and "wedging" it, the whole process of pounding and kneading is often finished in six or seven hours, and the use of the sieve is sometimes dispensed with, the powdered clay being simply sifted through the fingers. The method followed in the jails is to mix water with the powdered clay, and then allow it to stand until the coarser pieces sink to the bottom, finally drawing off for use the fine clay that rises to the top and rejecting the sediment; but this plan has not been generally adopted by potters, though it is occasionally followed in preparing clay for fine ware.

10. **Admixture of sand.**—Any admixture which it is proposed to make with the clay is made during the process of kneading. Sand is everywhere added to stiff clays to render them more plastic and to diminish the risk of breakage in baking, but the proportion of sand to clay varies greatly. It is largest in Karnál, where two parts of sand are mixed with one of clay, but more commonly only one-third or one-fourth sand is added, though the mixture of as much as two-thirds the weight of clay is not rare. The admixture of course varies with the quality of the clay, and no sand at all would be required if the clay was itself light and sandy. Instead of sand a light clay is often mixed with a stiff clay to render the latter more fit to work.

11. **Admixture of salt, saltpetre or powdered bulrushes.**—Salt and saltpetre are also mixed with clay, but the object of using them is to increase the cooling qualities of vessels such as "gharás" and "surahís" in which water is kept. But salt or saltpetre is so used in a few districts only, as in Sirsa, where the potters use salt only at the special request of their customers, and add only one part to one hundred parts of clay. In districts where this mixture is used, vessels made of it are considered superior to those made of simply clay, and fetch a higher price. Instead of salt, the Peshawar potters add one tola of "lúkh" or powdered bulrush to each sér of clay. This use of bulrushes is noted in Stuart's Punjab Plants, p. 246, where it is stated that the down of the ripe fruit is the part that is used.

12. **Storage of prepared clay.**—After having been well kneaded and prepared, the clay requires to be put aside for a day or two in a cool, shady place in order to lose some of its superfluous moisture. For this purpose it is made up into "pinnás" or balls of about 10 sérs each, and deposited inside the potter's house. Ordinarily, only just as much clay is prepared at one time as is sufficient for the work in hand; hence no arrangements for the storage of prepared clay are usual. But if a potter is in the habit of keeping a large stock of prepared clay, which he probably does only if he has to go far to get it, he deposits it in a wide hole made in the ground, called "ghambail" or "bhora," which has a very narrow mouth, closed by a pottery cover or a piece of cloth.

13. Potters' wheels.—The wheel or "chák" is used in "throwing" or turning most kinds of pottery ware, though large vessels are subjected to considerable manipulation after leaving the wheel. In the case of very large articles, the "chák" is not used at all, the moulding being done entirely by hand, and in the case of "surāhís," "jhajjárs" and "chillams" the wheel is used only to finish vessels prepared in moulds.

Two descriptions of wheel are in use, *viz.*, (1) a single wheel turned by hand and supported on a pivot placed upon the surface of the ground; and (2) a double wheel, which is fitted in a hole, 2 feet 6 inches or 3 feet deep, and is turned by the action of the feet. Figures of the two kinds of wheel are given in Plate I.

The simple wheel is called "rám chák," and is that which is almost universally used in the Divisions of Delhi and Jullundur, the double wheel being found only in Delhi and the large towns, where it is used for the moulding of big vessels. The double wheel is almost exclusively used in the Pesháwar Division and Deraját. In the rest of the Punjab both wheels are found, but wherever Kashmírí potters exist, they invariably use the "rám chák."

14. "Ram chak."—The "rám chák" is made either of wood, stone, or clay. The latter variety is the most common, the clay being mixed with some substance (such as the hair of camels or goats, or else cotton, flax, or donkey's dung) to bind and strengthen it and diminish the risk of breakage. The diameter is from 2½ to 3 feet and the thickness from 3 to 4 inches, and a round piece of stone (chákvati) is let into the under side to hold the axis of iron (kil or killi) or of wood (chuthi), which revolves on a pivot called "thána" or "chopat," supported on a framework of wood: otherwise the "kil" is fixed in the "thána" as in the diagram. Occasionally the wheel is strengthened by cross pieces of wood, and is enclosed in a circular wooden frame, and a slab of baked clay (thikra) or stone is sometimes found let in at the centre of the upper part to serve as a surface for working, and to prevent the clay of the wheel from damage by moisture. But the Punjabi potter cares little for these refinements, and generally works with a simple wheel which has neither frame nor slab.

Motion is imparted to the "rám chák" by means of a stick which is usually called "danda," but to which the names "soti," "chákdanda," "chalakára," "cháklai" and "chaket" are also applied in various districts. This stick fits into a notch or hole made near the circumference of the upper surface of the wheel. The hole inclines at an angle of 45° to the surface, with its mouth towards the centre, and thus the stick, which is about 3 feet long, when fixed in the hole, also inclines over the centre of the wheel. The workman imparts an initial impetus with his hands and feet, and then grasps the stick with both hands, the right being over the middle of the "chák," and the left holding the end of the stick. An action of the hand and wrist causes the wheel to revolve, and it is so well balanced that the impetus given is sufficient to keep it spinning steadily for from 5 to 10 minutes, during which time the "danda" is laid aside, and both hands are used in "throwing" the clay which has been placed ready on the wheel. The weight of the "rám chák" is from 1 to 1½ maunds, and it is raised 6 inches off the ground on its pivot. Its advantages are, that it can be moved as occasion requires and placed wherever the potter finds it most convenient to work, and it costs very little. A wooden "chák," which lasts for 20 years, can be got from a tarkhán for Re. 1, while the clay wheel will last 5 or 6 years, and actually costs the potter nothing. It takes three days to make, and its value may thus be put at 12 annas or under.

This wheel, however, is given to "wobble" when it begins to stop spinning, and the potter has to leave off his work to set it going again, thus losing the time which is economised by the use of the double wheel, which is turned by the feet and always spins steadily.

15. The double wheel.—The double wheel is called "chák lakri," and is fixed in a pit about 2 feet 6 inches, or 3 feet deep and 3 feet in diameter. It has an axis (tír or salai) which passes through a beam (phalri, parari) placed over the mouth of the pit, and turns on an iron point (sumba, tumli or chuthi) upon a block of stone (batta) or a piece of camel's bone or wood (chopat) fixed in the bottom of the pit. Attached to the axis there are two discs of wood, one

at the upper end and one near the bottom. The upper disc is that on which the clay is worked; it is 9 or 10 inches in diamater and 2 inches thick, and is made with its centre slightly raised; it is commonly called "topi" or "siri." The lower disc is 2 feet in diameter and 3 inches thick, and is bound round the outer edge with an iron band. It is known as "chák" or "thána," and the workman, sitting on the edge on the pit, pushes it with his foot and so sets the upper table spinning. The double wheel is generally known as "chák," but in the Deraját it is called "charkh" and "chakkar."

16. Other instruments.—In addition to a wheel, the following instruments are used:—

(1.) "**Taga.**"—A string, usually called "tága" or "dora," and also known as "chhín," "chíwan" or "kalwatri," used to separate the moulded portion of the clay from the rest of the lump on the wheel. It is drawn gently through the clay at the place where it is to be cut while the wheel is turning at full speed.

(2.)—(3). "**Thatwa" and "Konera.**"—These instruments are represented in Plate I, Figs. 3 and 4. A large vessel when it leaves the wheel is only roughly formed, and is much thicker and smaller than it is intended to become. This rough shape, while still moist and before baking, is beaten out to the required size and thinness by the use of the "thatwa" and "konera." The former is a flat mallet of wood, about a foot long, and has one of its sides slightly concave, and the latter is a convex piece of clay or stone fitted with a handle. The "konera" is held with the left hand against the inside of a vessel to be operated on, and the concave side of the "thatwa" is used to tap the vessel over the spot where the "konera" is held. In this manner the clay is beaten out as much as required. The commonest names for these instruments are "thatwa," "thatwi," and "konera" or "koneri." But the former is also called "thapa," "thapi," "thitman" and "thola," and the latter "paindi" or "pindi," "kariru," "chappi" or "thipa." In the Deraját the common names are used, but the "thatwa" is also known as "phala," "phatki" or "chappra," and the "konera" as "dhelu" or "watta."

(4). "**Arthra.**"—While the "thatwa" and "konera" are being used the vessel is held up in a concave rest called "arthra," "arthri" or "khopra." This is made of clay mixed with something to bind it, or else is simply the semicircular half of an old "ghara."

(5). **Scrapers.**—Iron blades or scrapers, called "chilni," are used to smooth the ware while it is on the wheel. These scrapers are occasionally shaped like small cups or "katora," and are then called "khoriya." Scrapers of wood are also used, as well as pieces of wet cloth (parola or lír) and smooth stones (gítí).

(6). **Dies.**—"Thappás" and "sánchás" are pieces of wood on which patterns are carved, and they are used for impressing these patterns on the ware.

(7). **Moulds.**—Moulds of baked clay, used in making "surahís," &c., are also called "sánchás." Before being used they are sprinkled with sand to prevent the clay sticking.

(8). **Brush.**—"Chatarni," "chatrín" or "qalam" is a brush used in applying "banni" or other colouring matter, and in painting lines and designs on pots.

(9). "**Patris.**"—"Patri," "pinawat" or "teriwat" is a slab on which clay is kneaded immediately before use.

(10). "**Trena.**"—"Trena" or "bhánda" is a bowl containing water or sand kept by the side of the potter as he works. The water is used to wet the hands with, and the sand to dry the hands or to add to the clay.

(11). "**Pasna.**"—The Amballa potters use a sort of hoop, called "pasna," with which they cut heaps of kneaded clay into thin slices in order to detect and remove stones or any other hard substances. This corresponds to what is known as "wedging."

17. Method of manufacture.—In proceeding to the manufacture of vessels, the potter thoroughly kneads some of his prepared clay on a "patri" and places it on "chák," after wetting the latter. The wheel is then

set in motion, and both hands are used to shape the clay by the pressure of the fingers and thumbs, the hands being continually moistened in the "trena." Small and simple vessels, such as "piálás" and "díwás," are finished on the wheel, and a large number is made from one lump of clay without stopping the revolution; each vessel is cut off when ready with the "taga." The larger vessels are worked up with the "thatwa" and "konera," sand being sprinkled inside and out to prevent sticking. A vessel is usually beaten out a little, and water is then applied to it, and it is allowed to dry for a few hours. After this, the beating out and drying process is repeated as often as necessary, sometimes as often as five or six times. When the final shape has been arrived at, all cracks are filled up with a mixture of clay and sand, and the vessel is smoothed on the wheel with the "chilni" or "gítís" and is set aside to dry a little before baking.

A coating of clay is often put over the bottom of pots to strengthen them, and a wash of "kallar," or a sprinkling of sand, salt or saltpetre, is sometimes applied to ware just before baking.

18. Colouring and ornamentation.—When the pottery is ready for the kiln, it is, as a rule, coloured with "banni" as described above. Circles are occasionally scratched on while the vessel is revolving on the wheel, and designs are stamped on with "thappás," or roughly scratched on with nails, and grains of sand are sometimes beaten in to form patterns. On the red "banni" the potter's women make rude paintings in black lines,—called "chittan,"—and white flowers or ornaments can be produced by the use of chalk. The black lines often have a peculiar meaning, for the "ghara" which a Hindu has to present to his "gúrú" must be ornamented with them; hence in some places, as in Karnál, "gharás" so marked are used by Hindús only.

Very few vessels are coloured black, this colour being used, as a rule, for "suráhís," "huqqás" and "chillams" only. Black is obtained after the vessels have been baked, by putting camel's or goat's dung or chips of deodár wood into the kiln, and then completely stopping up every opening, so that the smoke penetrates the ware and gives it the colour.

19. Kilns.—Regular kilns of the kind described by Mr. Baden-Powell are only occasionally met with in places where fine pottery is made. The most common form of kiln (áwá, bhatti) is a simple hole dug in the ground near the potter's house. The material used for firing is "oplás" or "kundás" (cow-dung cakes) with straw and sweepings—wood is too expensive. The "oplás" are laid a foot or so deep on the ground and arranged so as to stand up on their edges. Vessels are put over them in layers, each layer being separated from that above it by "oplás," and small vessels are enclosed in pans which are especially kept for this purpose. The whole kiln is covered over with sweepings and straw; holes are made in this covering and fire is applied from below. The heat is regulated by opening or closing the holes in the covering, and if the flame is pale the heat is considered too slow, and too strong if the flame is greenish. The character of the kiln is such that its capacity as well as the time taken to fire it are not constant. The larger kilns hold 500 vessels and require two or three days firing, while others take 100 vessels only, which can be baked in one night. The number of times the kiln is used also varies with its capacity; thus in Ferozepore it is used twice a month, but in Bannu only four times in the year. Owing to want of care in the preparation of the clay and ware, and also to the primitive nature of the kiln, the loss in baking through, breaking and burning is very great, and is said to amount to 25 per cent. in summer, and as much as 40 per cent. in winter.

20. Articles made.—The articles chiefly made are those in common domestic use or those required for agricultural purposes.

20. (1) Water-pots, "gharas," &c.—Among the domestic vessels, those intended for the keeping and cooling of water are the most important. Of these, the largest in common use is the "mat" or "matti," the price of which ranges from 1 to 4 annas, according to size. A larger vessel than the "mat" is the "mattan," which runs up to 12 annas in price, but this is meant not so much for domestic use as for the storage of grain and the supply of water in mosques. In Kángra the "mat" is known as "matloha." This vessel is

followed in size by the "cháti" or "matka," which is occasionally called "mátura"; the "cháti" is usually sold for about one anna. The "cháturi" is a vessel which resembles the "cháti," but is smaller; it is sometimes larger and sometimes smaller than a "ghara," which latter costs from 3 pies to one anna, and from its convenient size is the water vessel which is in most general use. The names "mat" and "cháti" are not used in the Delhi Division, where the largest vessels, costing three or four annas, are called "jhár," and the next in size, which are about twice as large as the ordinary "ghara," are known as "gol."

The vessels named above differ not only in size, but also in shape: they are shown in Plate II, Figs. 1, 2, 3. The "ghara" has a round body with a somewhat narrow mouth; the "cháti" and "matka" are made with a body like that of a "ghara," but with a lower neck and more open mouth; and the "mat," "mattan," "jhár" and "gol" all have an elongated body and broad mouth.

A cover, called "chapni" or "chúni," is sold with "gharás," "chátís," &c., and is not separately charged for. "Gharás," which are usually made to hold from 20 to 25 sérs of water, are used by all classes,—Muhammadans, Hindús and Europeans,—and on account of their porosity are particularly suited, as water vessels, to the Punjab. Vessels larger than the "ghara" are used for water chiefly by Muhammadans, as Hindús prefer copper to earthenware for keeping large quantities of water. But Hindús as well as Muhammadans more commonly use them for keeping grain, "gur," "shera," &c., while "chátís" and "matkás" are also used for keeping milk, and in "belnás" to collect "gur" as it is pressed out. The larger vessels are considered to be the more adapted to cooling water, but, as noted above, salt is sometimes used in making the smaller ones in order to improve their cooling qualities, and vessels made of clay mixed with salt realise slightly better prices than those made of simple clay.

"Gharás" from which hot water is poured while bathing are made with a small spout, and are used by Hindús and Muhammadans. The spout is added to an ordinary "ghara" before baking, and adds nothing to its price.

The ordinary life of a "ghara" is about 6 months, but poor people sometimes preserve them with great care; and the case of a man is recorded who had a vessel that had been in use five years, and of the cooling qualities of which he was still proud, though it was black and dirty. A poor family uses only a "ghara" or two during a year, while a family in easy circumstances, if Hindu, is said to use 20 to 25 in a year, but only 7 or 8, if Muhammadan. Every family, however, uses this and other water vessels, not only for water, but aslo for keeping grain, &c., and the manufacture of such vessels is the most important part of the ordinary potter's work. The Jullundur report gives estimates of the value of the various vessels turned out in that district in one year, from which it appears that the total outturn is of the value of Rs. 2,31,000, of which "gharás" were made to the value of Rs. 1,13,000, "chátís" to the value of over Rs. 5,700, and "mats" over Rs. 2,400; these water vessels thus having altogether a value of more than half the total outturn of pottery in the district. Had figures been given for other districts it would probably have been seen that the case was the same throughout the Province.

The number of vessels that a man can make in a day is difficult to state accurately, because the sizes of each kind of vessel vary so greatly. It may be roughly said that 20 to 25 small "gharás" or 8 to 12 large "gharás" are a fair average, while from 7 to 10 "chátís" or 4 or 5 of the largest vessels can be made in one day, though a "mat," if very large, may take several days. All these vessels are made roughly on the wheel, and are then hammered out with the "thatwa" and "konera"; and the estimates of daily outturn refer to the number that can be made in one day from prepared clay. As a rule, potters work together, or are helped by their families; so that one man is continuously at the wheel, while others look after the clay and the kiln. If, however, the same man prepared the clay and then made the vessels and baked them, it would take him three days or more to finish the number that he could mould in one day.

20. (2.) **"Surahi."**—An ordinary adjunct to the "ghara" or other water-vessel is the goglet, called "surái" or "jhajjhar," and also known as

"kúza" or "lota," and in Kángra as "oli." This vessel, like the "ghara," is made of various sizes; its commonest form has a round body with a long narrow neck (as shown in Plate II, Fig. 4), and it is used as the decanter in which to draw water for immediate use. The body is sometimes made on the wheel and with the "thatwa" and "konera"—the neck, and occasionally the bottom also, being made separately and joined on afterwards, with a ring of clay put over the join between the neck and body to make it more secure. But, as a rule, "surāhís" are moulded. The body is made in two moulds (having "naqsh" or designs stamped on them, which appear on the "surāhí," in relief). The moulded halves join horizontally in the middle, and the neck is made separately on the wheel, and the different parts are joined together on the wheel, which is revolved while they are adjusted. Inequalities in the joints are smoothed off with the wet cloth or the stones and scrapers kept for the purpose.

This vessel is used by Hindús and Muhammadans, and occasionally by Europeans. It has a great variety of forms besides that mentioned above. Thus the "battak" has flattened sides, and is fitted with ears to allow of its being slung up by a cord on the back of a traveller. The "jhárí" is another form, and is a large vessel, either round or flattened, but with a narrow, low neck into which two fingers only can be inserted, and is used for carrying water on journeys, or to places where work has to be done but water is not procurable. A variety of the "jhárí" is made in Shahpur of a size which can be conveniently carried in donkey bags. One kind of "surāhí," called "phúsa," resembles an English tea-pot, and another kind has two chambers separated by a space between them; the inner chamber, in which water is kept, is thus surrounded by a perforated chamber, which is used either for ornament or because it helps in cooling the water.

As "surāhís" are generally moulded, a large number can be turned out daily, and the average outturn is 30 or more ordinary "surāhís," 15 or 16 "battaks" or 5 or 6 "jhárís." The price of all varieties range from 3 pies to 1 or 2 annas, and even the more elaborate forms do not exceed the latter price.

20. (3.) "Gilas."—The "gilás" is generally used with the "surāhí," as the "surāhí" with the "ghara." The "gilás," more properly called "ábkhora," (or "matkána" in Delhi), is a small deep pot with a rim. It is moulded entirely on the wheel, and as it is perfectly simple large numbers are made in one day, so that the price is 1 or 1½ pies each—sometimes 3 pies each. Water is poured from the "surāhí" into the "ábkhora" and drunk from it; hence its use is confined entirely to Muhammadans, as Hindús are unable to use it owing to their belief that earthenware is defiled when anything has been eaten off it, or when it has been touched by the lips in drinking from it.

20. (4) "Astawa" or "Kuza."—Another vessel peculiar to Muhammadans is the "astáwá," "kúza," "lota," "badhna" or "wadhani," which is used for ceremonial ablutions before prayers—some are usually kept in every mosque for the use of the worshippers. It is commonly made like a long necked "surāhí" with a spout and handle (Plate II, Fig. 5); the spout is characteristic, but the handle is sometimes dispensed with. The body and neck are made like those of a "surāhí," and the spout and handle are made afterwards and joined on. As the vessel is moulded, a large number can be made in a day, and its price is generally from 3 to 6 pies.

20. (5). Cooking-pots.—Cooking vessels of earthen-ware are not used by Hindús of good caste, as earthen-ware is defiled if anything is cooked in it, but Muhammadans and low-caste Hindús use a cooking-pot which resembles a "cháti" (Plate II, Fig. 6). This pot is known as "hándí," and it also has the name "kúná," "kúní" or "katwi." It is made in the same way as a "ghara," and 10 large or 20 small ones can be made in one day, the price varying from 3 to 9 pies for each vessel. The large ones are also used to keep water in, and all "hándís" are used both by Hindús and Muhammadans for the storage of dry goods, such as grain, flour and spices. The "chapni" or "chúni" is used as a cover for this pot, as well as for the "ghara," and is called "mali" in Kángra.

20. (6.) **Vessels for cooking roti.**—The "tawi" or "thobi" is another cooking vessel, and is used for cooking "roti." It is a flat plate on which the "roti" is placed and baked, and costs from 3 to 6 pies, about 15 being made in a day. In Kohát a "tandúr" is also used for cooking "roti," and is described as a large jar, which is heated, and round the sides of which the "rotís" are placed.

20. (7.) **Plates and Dishes and Cups.**—The vessels used as plates and dishes are the "tabáq," "tabáqrí," "patrolí" and "rikábí"—the forms of which are shown in Plate II, Figs. 7 and 8. These are all round flat dishes with raised sides, and differ only in size. The largest is the "tabáq," sometimes called "domri," or "cowri," and it is used for serving up rice or other food. The "tabáqrí," "patrolí" and "rikábí" are all small dishes, and are used as plates. The "tabáq" is placed in the centre of the circle formed by the family or guests, and each person dips his fingers into it, and transfers a portion of its contents to his own "rikábí" for disposal. Hindús use plates only of metal or leaves (patal); hence these earthen-ware dishes are peculiarly Muhammadan. Their price varies from 1 pie for the "rikábí" to 6 pies for the "tabáq."

A vessel called "sanak," and corresponding to the "rikábí," but made more like a saucer, is used by poor Hindús in place of brass "thálís," and occasionally by rich and high-caste Hindús for acid food, which would damage metal vessels, or on the occasion of feasts, when many plates are required. The "sanak" costs 1½ pie, and is usually thrown away after having been used once.

Muhammadans use cups of various sizes—"piála" "piálí" ("batlí" in Bannu)—for drinking soup, milk and other liquids. These are made on the wheel in the form of a deep saucer or cup (as in Plate II, Fig. 9), the bottom being flattened after the vessel is removed from the wheel. Several hundreds can be made by one man in a day, and the larger ones are sold for 1 to 3 pies each, while the smaller ones cost only 2 annas per cent. Hindús only use them as they use the "sanak."

Covered dishes, called "sarposh" or "dhakwán," are used by Muhammadans for serving up "roti." They are like a "tabáq" with a cover, which is often ornamented with stamped patterns, and cost from 1 to 3 annas each.

20. (8.) **Vessels used as receptacles for grain and other dry goods.**—The vessels in which water is kept, and more especially those of larger size, are used by both Hindús and Muhammadans as receptacles for dry goods. But vessels made especially for this purpose, and also used by all classes, are the "jhánwála," which is like a large "cháti"; the "kulfa," with its diminutive the "kulfí," a semi-circular pot provided with a cover; the "taula," which is made something like a well "tind"; and the "kulhia," which is a very small "taula." Five hundred "kulhiás" can be made in a day, and they cost about 2 annas per cent. only, but only 10 to 20 of the other kinds of vessels can be turned out daily, and their prices are:—"taula" 6 pies each, "jhánwála" 1 anna each, "kulfa" and "kulfí" from 6 pies to 2 annas each.

20. (9.) **"Martaban."**—The "martabán" (Plate II, Fig. 10) is a small deep jar with an elongated body, which is used by Hindús and Muhammadans to keep pickles and acid articles. In Kángra a vessel used for similar purposes is called "jasla," but is shallow, and has a broad mouth, and does not resemble the "martabán." About 10 or 12 of these can be made in a day, and they sell for 3 to 6 pies each.

20. (10.) **Vessels for milk and oil, &c.**—The "dahauni" or "doháwa" (Plate II, Fig. 11) is a vessel used as a milking-pail, and also for keeping and warming milk, and Hindús use it as well as Muhammadans. Ordinary well "tinds" are also used for milking, but the vessels used to keep "ghi," butter, milk and oil in is more usually the "dola" or "dolí," which is also known as "maghi," or by the general name "kúza" (Plate III, Fig. 12). It holds from 2 to 5 sérs of milk, and is made with a narrow mouth, costing from 3 to 6 pies each. The "kunda" and "jamáwána" are more especially intended to keep curds in, and the camel-men in Shahpur keep their milk in a vessel known as "daura."

20. (11.) **Vessels used by milk-sellers and "halwais."**—The "khumrú" is a small vessel made for Hindu milk-sellers, and is used by them to send out their milk to customers. The "shakora" is another vessel used for the same purpose, and also by "halwáís" for the sale of sweetmeats. It is seldom used by Muhammadans, but Hindús use it to keep milk and curds in, and at feasts it is used as a pot for curds or pickles. This and the "khumrú" are small pots of simple form, and as they are easily made on the wheel, their price is only from 1 to 4 annas per cent., according to size.

The "thuthí," which is a small plain saucer, and costs 6 pies per cent., and the "kular," another small vessel selling for 1½ pies per cent., are also used by milkmen and "halwáís" for the sale of their goods. All these vessels are, as a rule, thrown away by Hindús after use. The "kular" and "thuthí" are shown in Plate III, Figs. 13 and 14.

20. (12.) **Vessels used for kneading flour.**—The "tabáq" mentioned above is used to knead flour in, and vessels made especially for this purpose resemble it. They are called "sáhnak," "kúnál," "kunda" or "patrí," and are larger than the "tabáq," being usually about 2 feet in diameter, and they cost up to 4 annas each, according to size. They are also used for washing clothes and other purposes.

20. (13.) **"Tinds" and other vessels used by Zamindars.**—Of vessels used in agriculture the "tind" or "lota" (Plate III, Fig. 15) is the most important. It is a small pot tied on to the "máhl" or rope of a Persian-wheel, by which water for irrigation is raised from the well. From 50 to 100 can be turned out on the wheel in a day, and the price is more commonly 8 annas per cent.; but in some districts it is as low as 4 annas per cent., and in Karnál as high as Re. 1 per cent. If they are bought retail they cost from 1 to 3 pies each.

"Nánds" or "Kúnds" (Plate III, Fig. 16) are large vessels used as feeding troughs for cattle, and also as receptacles for water by masons, and for dyes by dyers, and for other purposes. Being too large to work upon the wheel they are made by hand, and only 3 or 4 can be turned out in a day. "Nánds" usually cost 2 or 3 annas each.

The "dokhla" or "chuttu" is a vessel used in clearing grain from dust; it is made with a wide mouth, and costs 1 anna 6 pies or 2 annas each.

In the Deraját a square bin for corn and flour, called "grand," is made, which is especially large, and costs 8 annas apiece.

20. (14.) **Dyers' "mats," &c.**—Among the articles made by potters are vessels for use various trades. Thus large "mats" are made for dyers, which are 4 feet high and 3 feet broad in the middle, and are intended to hold indigo. They are made especially well in Hoshiárpur, whence they are exported to the neighbouring districts. Similar "mats" are made for sugar manufacturers, and large "kunáls" are made for tanners to be used in soaking leather; the "kunáls" made by "Purbia" potters at Karnál have some local fame. All these large vessels are made by hand, and each takes 2 or 3 days to make. The price depends on the size, but averages about 8 annas.

20. (15.) **"Huqqas" and "Chillams."**—Potters also make "huqqás" or tobacco pipes and their parts in various forms. The "huqqa" commonly smoked by peasant women (shown in Plate III, Fig. 17) has the "chillam" or tobacco-holder joined on to the body of the "huqqa," which holds water: this variety costs 1 or 2 annas, and 3 or 4 can be made in a day. But the commoner "hubble-bubbles" have the "chillam" or "haweza" separate from the water-holder, which is itself called "huqqa." The latter are made in various shapes, and are sometimes plain, sometimes ornamented with stamped designs or grooves, but their price does not exceed 6 pies as a rule. The "chillams" also have various shapes, some of which, such as those made at Jhajjar in Rohtak, are highly ornamental. The commoner forms are broadly divided into "chillams" used in towns (Plate III, Fig. 18) and those used in villages (Plate III, Fig. 19), the former being better made, and having a wider mouth than the latter.

"Chillams" with covers are also made for chárás smoking, and the prices of all varieties range from 1 to 6 pies apiece.

20. (16.) **Miscellaneous articles.**—Among other articles made are the following :—

"Chirág" or "díwa" (Plate III, Fig. 20), the ordinary oil lamp made to hold about 2 chittáks of oil, which is turned on the wheel, the notch for the wick being made by pressing down the edge with the fingers. They sell at 1 or 2 annas per cent., as a very large number can be made in a day.

A specially small "chirág," called "dewla," used only by Hindús for illuminations during the "Diwálí," and costing 6 pies per cent.

Clay stands for "chirágs," sometimes used in place of the more common stands of wood.

The "mátra," or "chakki" which is a large shallow vessel in which grindstones are placed, and which serves to collect the flour as it is ground out. It is made by hand, and costs from 1 to 3 annas.

Mortars, called "daura," "dauri," okhlí," or "kunda," which are made on the wheel with few pieces of stone let into the bottom to strengthen it. These are used with wooden pestles for pounding medicines, condiments, &c.

"Dawait" or ink-pots (Plate III, Fig. 21), of which from 100 to 300 can be made in a day, and which cost 4 or 5 annas per cent.

"Kulábás" (drainage pipes), "parnálás" (roof drains), "khapra" (tiles), which are all moulded by hand.

"Gamlás," or flower-pots, selling at Re. 1-8-0 to Rs. 4 per cent.

"Pinjrás," or pierced tiles for windows or walls, and a few other miscellaneous articles, such as the "kángrí," a vessel used chiefly in the hills, and said to be of Kashmírí origin, which is filled with live charcoal and carried about under the clothes for warmth; "anárs," made for the fire-works, so called; "agardán," for holding burning incense; "chilomchís" or basins; "sil" or "sang-pair" (bathing slabs), &c.

21. **Noteable ware.**—Every district has one or two places in which the best pottery is said to be made—the especial estimation in which the local ware is held being most often the result of the excellent clay found in the neighbourhood. But the ware made at Jhajjar in Rohtak and the "kágazí" pottery made in various towns have more than a merely local celebrity.

21. 1.) **Jhajjar Pottery.**—The Jhajjar ware is not glazed or coloured (except that a sparkling white is sometimes imparted to it by the application of a mixture of kikar gum and mica (abrakh) obtained in the neighbourhood). The articles made are chiefly "surahís" "huqqás," "chillams," &c., and they are coloured in the usual way with "banni," but the Jhajjar clay is good, and the workmen (who number 71, including women and children) are skilful, so that the ware is superior to that ordinarily made. The demand, however, is small, and it does not realise much higher prices than the ordinary pottery.

21. (2.) **"Kagazi" Pottery.**—"Kágazí" or paper pottery is remarkable for its thinness—a "surahí" holding 2 sérs of water weighs 8 chittáks only. It is made at Pánipat in Karnál, Jhajjar in Rohtak, Sheikh Bastí in Jullundur, Tánda in Hoshiárpur, and probably in a few other places. It is mentioned by Mr. Baden-Powell as being made in Kángra, but the district report does not notice it. The clay used is the ordinary clay, but this is prepared with much greater care than usual. It is steeped in water for 2 or 3 days, and carefully drained off, and then worked up with the hands to ensure its being absolutely free from pieces of "kankar" or other hard substances. The price is only a very little higher than that of ordinary pottery.

22. **The Potter's caste.**—The maker of pottery is always a "kumhár" by caste, whether Hindu or Muhammadan. Those who are engaged chiefly in making "surahís" and the like, or "kágazí" ware, are called "kuzagars," to

distinguish them from the "kumhár," who confines himself to making "gharás" and "tinds" and the rougher sort of ware. The report for Hissár is the only one that notices subdivisions of caste, and in that district the "kumhárs" call themselves "Tanesár Rájpúts," and are divided into the gôts of "Golu" and "Melar," and also subdivisions indicating the district of their origin, such as "Desí" and "Jodhpuría." In the Karnál report a similar subdivision is noted in the case of "Purbiás." But though he claims to be a "Rájpút," Hindús do not regard the "kumhár" as of a caste superior to those of his fellow "kamíns." According to Monier Williams his caste has a mixed origin, and results from the union of a "Brahman" with a "Kshatriya" woman, and owing to this fact, and because they occupy themselves in keeping donkeys and collecting dung and sweepings, "kumhárs" are regarded as of low caste. The Muhammadans, who must for the most part be converts from Hindúism, claim to be "Sheikhs"; among them there are a few Kashmírís, who are found chiefly in Siálkot, Gujrát and Amritsar. Muhammadan Chogattás and Bhattís occasionally are found as sellers of pottery-ware, but do not themselves work as potters.

In the Deraját and Pesháwar the industry is almost exclusively in the hands of Muhammadans, but Hindús, as well as Muhammadans, are found throughout the rest of the province, and in the south-east are the more numerous, while in Kángra the potters are nearly all Hindús.

23. Number of Potters.—The figures given in the reports are not sufficiently clear to afford an estimate of the number of potters in the province. In a few districts no estimate is made, and it is simply stated that potters are found in nearly every village, and when figures are given their basis varies in different districts. Thus the Amritsar report gives the number of "kumhárs" as 32,639, according to the last census, and remarks that all these do not necessarily work as potters, without making an estimate of the number of those that do. But the large proportion of those that do not so work is shown with clearness in the Hissár report. In reference to that district, Mr. Ibbetson has noted in his Census Report that the "kumhár" is very numerous, and is often a husbandman, and the district report estimates that of 21,623 Hindu and 6,077 Muhammadan "kumhárs," 1,621 only work as potters. As far as I can judge only $\frac{1}{3}$rd or $\frac{1}{4}$th of persons belonging to the "kumhár" caste are actually potters. The following figures from the reports show the amount of discrepancy:—Jhang is said to have 15,309 potters, while Lahore has only 4,765 and Delhi 2,000, and Montgomery, with more people and more villages than Jhang, is said to have 1,000 only. The total numbers for the province must be very considerable, as any but the smallest village has 2 or 3 potters.

24. Town-potters.—The number of town-potters, *i. e.*, potters who sell their wares for cash only and get no "haq sep," are returned as follows:—Gurgáon 150, Delhi 600, Hoshiárpur 414, Jullundur 1,008, Amritsar 60 families, Siálkot 340, Gujrát 4, and Dera Gházi Khan 240: these numbers including women and children. The figures probably do not give an exact estimate of the number of town-potters, but such men are found only in Sadar towns and cantonments, and exceed 500 in Delhi and Jullundur alone. In the latter case, the large number is not specially explained, and its correctness is doubtful. It probably includes men who are not altogether town-potters, but are to a certain extent "sepís" as well, and such men are found in all the large towns of the province, but cannot be strictly classed as town-potters. Therefore it appears that the number of the latter bears a very small proportion to that of village-potters.

25. The Potter as a "sepi."—The position of "kumhár" as "sepís" is recognised in every district except Kángra and Kohát and the Nowshera and Abbottabad tahsíls of Hazára, where the potter is not a "sepi," and vessels supplied by him are paid for in cash. In tracts when "charsás" or leather buckets are used instead of Persian-wheels for irrigation, the supply of well "tinds," one of the chief "*raisons* d'*être*" of the customary service, is not required, and in some tracts of this character, as in a part of Karnál, the "kumhár" is not a regular "kamín." In Hissár his position is somewhat anomalous, for the district report states that he is a sepí, but has no fixed

"haq," and cannot, like the "lohár" and others, claim a customary share in the harvest; but, in spite of this, he is apparently paid his share regularly.

26. The Potters' "sep."—It is impossible to give a general estimate of the average income which a "kumhár" derives from his "haq sep," for the basis of payment, as well as the service rendered, varies, and variations are found even in different parts of one district. The potter is indispensable as a "kamín" where Persian-wheels are used, and this method of irrigation has much influence on his prosperity. In Dera Gházi Khan, for example, the increase of well cultivation has greatly improved his position and prospects, and it appears that in Amritsar, in villages where there are no wells, the custom is growing of paying cash for household pots and "gharás," and this is being extended to villages where the canal has led to the closing of wells. But his duties as a "kamín" are also to supply the "sarái" and household with domestic vessels, and to give a new set of vessels on a marriage or death, and to supply agricultural vessels, such as those used in "gur" presses; occasionally he has also to carry his employer's grain as a portion of his service. Separate payment in grain or in cash is sometimes made for "tinds," and ordinarily for all the larger sorts of vessels.

27. Amount of "haq sep."—The amount of "haq sep" is determined either with reference to the number of wells supplied with "tinds" or per plough used by the "zamíndar" for whom service is done, or per house; but in some places the "kumhár" gets a fixed percentage on the total crops of his employer, or a fixed payment in kind per crop, without reference to the number of wells or ploughs used. In Dera Ismail Khan payment is made by giving the "kumhár" the produce of one "marla" of the wheat or turnip crop, and paying him Rs. 2 in addition if he supplies "tinds."

The following figures will show how much the payment varies:—

In Hissár the "haq sep" is 5 to 10 sérs grain annually per house, while in Ferozepore it is as much as 7½ maunds.

In Hoshiárpur only 1 "bharí" and 1 "páli" are given per plough (the "bharí" being as large a sheaf as a man can carry on his head, and containing about 12 or 14 sérs of grain, and the "páli" being a sheaf about half as large as the "bharí"), but cash or grain is paid for "tinds" or large vessels, and the "kumhár" is expected to supply only moderate sized household vessels. In Gurgáon the "haq" per plough rises to 1 maund per annum.

Fixed payments are made in Jullundur, where a "kumhár" who supplies "tinds" gets 5 maunds grain and a "bharí" per annum, or 1½ maund and a "bharí" if he does not supply "tinds," and Gujránwála where the payment is 14 "bharís" from various crops during the year.

The payments made by a proportion of the crop vary from about 1¼ per cent. in Siálkot and Shahpur to 2¼ per cent. in Dera Gházi Khan.

Besides the payment in grain, "gur" and cotton are also given in various quantities, and the "kumhár" has the right to collect cowdung for his kiln in the village, and he gets his clay and grazing for his donkeys free from the "shámilát" lands.

28. Presents at marriage, &c.—When the potter takes new vessels to a house on a marriage or other festival (on which occasions the proficiency he has acquired in kneading clay is sometimes made use of by employing him to knead the flour required), he gets some small payment in grain and a money present of from 4 annas to Rs. 3—usually a little more than the value of the goods supplied, but depending on the wealth and position of the family. A larger present is given on the marriage of a son than that which is given on a daughter's marriage.

Besides the "haq sep" a small sheaf of grain is occasionally given at the harvest when the reapers come to the end of a field, but only if the potter brings out a new "ghara" or visits the field in connection with the work.

29. Number of houses or wells supplied by one potter.—One family usually supplies 14 or 15 houses or works for the same number of ploughs. The number of vessels supplied per house is about 20 large and 25 small ones per annum; chiefly "gharás" and "suráhís" in the case of Hindús, and also including ábkhorás," "tabáqs," "hándís," &c., in the case of Muhammadans.

A well takes from 1,000 to 1,200 "tinds" per annum, and a family of potters can work for 3 or 4 wells and supply the sharers with household vessels.

30. Sale of vessels to non-zamindars.—After he has supplied those for whom he works as a "sepi," the "kumhár" can sell his spare pots to non-agriculturists, and he often contracts with them for Rs. 1 or 2 per annum. Moreover, in some large towns, as in Hoshiárpur, weekly pottery markets are held, where the country potter can afford to undersell the town workmen, thus giving a proof of latter's statement that the "háq sep" gives the village men an advantage.

31. Donkey and Wheel worship.—The customs of donkey and wheel worship may be noticed here as interesting, though the amount the potter gets from them is small, and they are said to be dying out. On the birth of a child, during small-pox epidemics, and in the month of Chait, women worship "Mátá Devi." The "kumhár," as the care-taker of the donkey, Mátá's favourite animal, which is worshipped, comes in for an offering of cooked rice, &c. "Banniáhs" are especially addicted to donkey worship, and it is frequently performed by them. The donkey is also worshipped at marriages; the bride-groom before the ceremonies at the bride's house has to touch it with his feet, and the "kumhár" who brings the animal is fed and gets some money.

Wheel worship is performed both before and after a marriage by the bride's female relatives, and is either "Krishna" worship (the wheel being an emblem of that god), or else it represent the worship of "Brahma Prajápati," the wheel being the symbol of reproduction.

32. Grave-digging.—Muhammadans pay "kumhárs" a few annas on the occasion of a burial for digging the grave, and a little cloth is given besides.

33. Co-operation.—There are no large factories in the province, but "kumhárs" seldom work singly. As a rule, at least two or three work together—the carrying, preparing and moulding of the clay and the superintendence of the baking being divided among the co-workers. Moreover, though the wife of a potter and his children under 15 are able to give no assistance in moulding pots, they help in getting and preparing clay, and in filling and tending the kiln, and the potter at his wheel is attended on by members of his family who bring him water, clay, &c., as required. The colouring of vessels with "geri" and ornamenting them with black lines is peculiarly the work of the potter's wife, and she also helps in carrying the ware out for sale and in selling earth in the towns, while the children look after the donkeys while they are grazing.

34. Other occupation usually followed by Potters.—Pottery work is at a standstill during the rains, because clay cannot then be properly dried and prepared, and baking is impossible with the unprotected oven. Thus the potter, to live entirely by his trade, must make sufficient to keep him for the year in 8 months, for the compulsory suspension during the rains lasts from mid-June to mid-October. But he barely makes enough to support himself during the working seasons, and cannot afford to be idle for 4 months, though if he has laid in a good stock of pots he can realise double the ordinary prices for them during that period. He, therefore, has some other occupation which he follows in addition to his trade, and most often he is an agriculturist and cultivates his own land, as a tenant, or he works as a labourer for others. But he turns his attention to many other occupation as well, such as making saltpetre, sewing "tat borahs," weaving, plastering, &c. Town-potters and others living near towns combine brick-making with pottery, as a good profit can be made from bricks owing to the demand due to the fact that "kacha" houses are

being replaced by "pakka." An occupation which to a great extent is peculiar to the "kumhár," and which is of importance to the business of the country, is that of a carrier, which the "kumhár" adopts the more naturally, as the necessity of carrying clay for his own work compels him to keep one or more donkeys, and as these graze on the village common and cost little to keep, the carrying trade is a considerable source of profit. The potter is the ordinary grain-carrier of the villages, and is paid for taking grain from the field to the threshing-floor (except in the few cases when this duty is included in his "sep"), and he is employed by traders and middlemen to carry grain from villages to towns and railways. The donkey is also made use of in transporting earth for sale, chiefly for building purposes—to the towns in the neighbourhood—where it sells for 1 or 2 pice per bag.

35. Average earnings and general condition of Potters.—The average earnings of a potter who lives entirely by his trade are estimated in the reports at from 2 to 4 annas per diem, the price realized for the ware being nearly all profit and wages, as the clay, fuel and other materials usually cost nothing. On the whole, the village potter with "haq sep" is perhaps better off than the town potter, but the latter can earn more if he is a good workman, and has sufficient opportunities for selling his goods. The average price of vessels has risen during the last few years, but the cost of living has increased proportionally, and the real profits of the potter remain unchanged.

Altogether a potter is not generally able to do more than maintain himself and his family, and he is often drowned in debt. The fact that he will abandon his trade as soon as he can obtain enough money to enable him to start another, is a proof of the smallness of his profits. Whenever a "kumhár" has made a little money he starts as a contractor, or money-lender, or devotes himself altogether to the carrying trade, and so helps to swell the numbers of those "kumhárs" who are not potters.

36. Trade in pottery ware.—Owing to the method in which pottery is disposed of in exchange for "haq sep" and the manufacture of ware in small quantities in every village, no estimate can be made of the total outturn per annum. There is no import or export trade in rough ware, though a little is sent from Sirsa to Patiála and Bikanir, and about Rs. 100 worth per annum goes from Dera Gházi Khan to the Biloch and Pathán tribes—being taken to complete the loads of camels carrying other merchandise.

Inter-district trade is carried on by means of fairs, and "zamíndárs" occasionally go out of their district to get articles which are considered to be made better elsewhere. Thus "suráhís," &c., made with salted clay go from Kohát to Pesháwar and the Cis-Indus districts; the Ferozepore people go to Lahore to get goods, which they think better than their district goods; the Pesháwar ware is preferred in those districts to that made in Bannu and Hazára; and Dera Ismail Khan imports from Mooltan. But this trade is inconsiderable, and the price at which local made pottery is sold is so low as not to admit any profit on imported goods, which would not realise more than the local price, because, for all practical purposes, rough ware is made as well in one place as in another.

The finer goods are sometimes exported. Thus Rs. 50 worth of the Jhajjar ware goes annually to Delhi (but the ware is not said to be made in sufficient quantities to render export profitable), and the "kágazí" pottery is sent away for sale from the place of manufacture, as the local demand is very small.

37. General condition and prospect of industry.—The case of this latter ware and the Jhajjar ware, which are both superior to the ordinary pottery, show that the demand exists only for objects of simple utility, and that fineness of work does not pay. The demand for rough ware will never fail, as the pottery made is peculiarly adapted to the demand, but this demand is limited by the prejudices of Hindús, who believe that gold is purified by air, and silver and other metals by water, but that earthen-ware when once put to any use that requires purification is rendered useless, for the taint cannot be

eradicated from it. Hence they do not generally use pottery for eating and drinking from, though in some places, as in Ferozepore, Hindú Jats make use of it, and the poverty of the lowest and poorest castes of Hindús compels them to resort to it in place of the more orthodox brass and "kansi." But there is no objection to Hindús keeping grain, oil, &c., in earthen vessels, though for these purposes (among Hindús and Muhammadans as well) the common tin cannister in which oil is imported is coming into greater favour, to the prejudice of pottery. Moreover, among Muhammadans, the demand for unglazed pottery is decreasing, because whenever they can afford to do so they throw it over for metal vessels and imported China goods, which are at once more strong and more serviceable, and against which the "kumhár" cannot compete with his methods of working and the means at his disposal. The extent to which China is ousting pottery—chiefly unglazed ware, for little glazed ware is locally made—appears from the fact that last year Rs. 10,300 worth was imported into Lahore.

The potter strictly follows tradition, and apparently not a single new pattern or vessel has been introduced. Something may perhaps be done by teaching better methods of preparing clay and baking, thus saving the present large loss in the kiln; but the "kumhár" has not shown himself eager to adopt the improved method followed in jails, and the primitive nature of his tools, as well as his poverty, render it unlikely that the character of the common ware will be changed or improved; for there is no demand for better ware, and the industry will continue to be carried on in the future as it has been in the past, though a slight decrease in the amount of pottery made may be anticipated from the increase in the use of metal and imported China.

II.—Art Pottery, glazing and the manufacture of Toys.

A.—Art Pottery.

38. Centres of Art Pottery.—A trade in art pottery exists only in Mooltan and Peshawar. Attempts have been made to introduce "káshigari" into Amritsar by inducing workmen from Mooltan and Sind to settle there, but they have failed. The introduction of a sort of porcelain manufacture into Delhi has, however, been more successful, and Delhi is now noted for its white pottery. Vessels are occasionally glazed and coloured elsewhere than at Mooltan and Peshawar, but there is no regular manufacture as in those towns. A few potters, such as Muhammad Sharíf of Jullundur, are still able to make first-class painted and glazed tiles, but the manufacture of tiles, which was once so extensive, has practically died out in the Punjab, and it is stated that even when tiles required for mosques and buildings can be prepared locally, the orders for them are not given to the local workmen. The obstacles in the way of art pottery are the lack of enterprise displayed by the workmen, the jealousy with which they guard their secrets in order to prevent competition, and the readiness they display to abandon old forms and methods suited to native work in order to adopt cheaper and less effective materials, such as dies, or English patterns that are unsuitable.

39. Mooltan Pottery.—The Mooltan art pottery is known as "káshigari"; the makers are called "Káshigars," and are a distinct class by themselves. Mr. Kipling, in a note printed in the Mooltan Gazetteer, states that the Mooltan work had the same origin as that of Sind, but differs from it technically. Originally it was confined to the manufacture of tiles, slabs, &c., painted with text and other designs, and intended to be built into mosques, tombs and other buildings. But the native demand for this kind of work has died out, and a European demand has arisen which has entirely changed the character of the articles made, and "has developed a trade in flower-pots, large plateaux for decorative purposes, and many varieties of the comprehensive word vase."

39. (1). **Manufacture and colours used.**—The clay used is the same as that described as in use for rough ware, and the "Káshigar" does not himself make the goods he decorates. He buys from ordinary potters unbaked vessels made of good clay, well prepared, and then smooths the surface and fills in all

cracks and holes with sand. As the clay used is white, there is no necessity to coat the ware with chalk and gum as is done in Peshâwar and in Sind, and a coating of glaze made of "sufeda" (carb. of lead) 1 sér, "kánch" 1 sér, and ⅛ sér of gum, mixed in water is applied to the vessel, and flowers and designs are traced upon this. For this purpose artists (naqásh) are employed at 10 annas per day. The groundwork and designs are then coloured, light and dark blue and green being the colours most commonly used. The blue is obtained by applying "lájward" (*Lapis lazuli*) mixed with water, the mixture being thick for dark blue, and thin for light. Green is obtained from copper filings calcined as described by Mr. Baden-Powell. The "lájward" and copper oxide assume the required colours on baking, and after their application the pottery is covered with a glaze of "kánch" and gum, and dried, and then baked in a regular kiln with "jhand" (*Prosopis spicigera*) wood, which gives little smoke, care being taken to arrange the pottery so that the glaze shall not be damaged. A colour of recent introduction is brown, and for this the pottery requires two bakings. There is one baking before the glaze is applied, and one for the glaze, which consists of 1 part of "murda sang" (oxide of lead), 1 part of "qalai" (amalgam of tin and mercury) and 16 parts of lead.

The colours used can only be applied together within certain limits. Thus on a white ground designs can be brought out in light or dark blue, or green; white designs on a blue ground can be obtained by painting with "lájward," all except the part to be left white; and dark blue on light blue, or *vice versâ*, is obtained by applying "lájward" more thickly on the designs or on the rest of the pottery. On a brown ground designs in purple are obtained by using "anjani" (an oxide of manganese), and designs in green by mixing copper oxide with the "anjani." The brown colour cannot be produced on a ground of another colour.

The materials used are sold in the bázár at the following prices per sér:—"sufeda" Re. 1, "kánch" 4 annas, "lájward" Rs. 10, copper filings Re. 1, "murda sang" 5 annas, "qalai" Rs. 1-10, lead 5 annas.

39. (2.) **Price.**—The prices of the articles made depend on their size. A piece of work 6 inches high costs 3 or 4 annas, 9 inches high 6 annas, 12 inches 8 annas, and so on, up to 3 feet high, for which the price is Rs. 3-8. Pierced pottery is sold for higher rates, the price being 1 anna per inch, except for the larger sizes, such as 14 inches high, which costs Rs. 1-8.

39. (3.) **Number of workmen and condition of industry.**—There are only 5 shops of "káshigars," employing 15 workmen. Their profit is said to be 25 per cent. of the selling price of their wares, and average 8 to 10 annas per day, each shop selling about Rs. 600 or 700 worth of goods in the year. The demand is entirely European, and the goods are all exported. The demand, however, is decreasing, and the work is deteriorating in quality, as the newly introduced browns and greens are not so effective as the original blues, and deprive the work of its distinctive characteristics. European forms are also being copied, and badly copied, and a good deal of the ware made is on too small a scale to admit of its being effective, for the work is too rough to bear a close inspection, and loses its effect by attempts at minute execution. The "káshigars" are themselves very jealous of their secrets, and keep the trade in their own hands, and their industry is not therefore likely to spread.

40. Peshawar Pottery.—Mr. Kipling remarks that the manufacture of glazed pottery in Peshâwar for the native table is of ancient date, and may be considered peculiar to the district; for although European pottery is finding its way into Muhammadan households in many parts of India, there is nowhere else a local manufacture of glazed ware for eating and drinking from.

40. (1.) **Manufacture and colours used.**—Ordinary clay vessels are used as in Mooltan, but in Peshâwar the pottery is covered with a "slip" or coating of "kharia mittí" (chalk) and gum (prepared as described in "Punjab Manufactures," II, 225) in order to avoid the red colour to which the clay naturally burns. Red is obtained on this white ground by applying a soft red chalk, and black from a soft black stone, both obtained from the

Khyber Hills. Blue is got from "lájward," and green by mixing copper dust with the glaze. The basis of the glaze used is lead, and the vessels are carefully burned in a kiln fired with wood.

Chalk costs 5 annas per sér, the red and black earth costs 12 annas and Rs. 2 each; copper filings can be got from a copper-smith for 12 annas per sér, and lead is said to cost Rs. 2 per sér in Pesháwar.

40. (2.) **Prices and profit.**—The articles made are pierced desert plates, "suráhís," brackets, vases, &c., and their prices are from 2 to 5 annas each. Thus a "jangla" (flower-pot frame) or plate costs 5 annas, a vase from 2 to 4 annas, a tea-cup and saucer 1 anna, and so forth. The profits average from 20 to 25 per cent. on these prices, and workmen get their food, and from 6 to 8 annas per diem; experts may at times obtain as much as Re. 1.

40. (3.) **Number of workmen and condition of industry.**—There are 5 makers of glazed pottery, of whom the most important is Shams-ud-dín. "When he is on his mettle he can turn out very good pottery, excellent in shape, colour and glaze, but more often he prefers inferior workmanship, and often his shop does not contain a single pleasing article." The district report says:—"The Pesháwar pottery is noted for its colouring rather than for form or design. When properly applied the copper greens and rich mineral colours combined with the thick clear glaze produce a distinct effect, which, though characteristic, might be considered rather *bizarre* than beautiful. There is a great tendency to subordinate form to relief ornamentation, and that of an inferior and debased kind copied from cheap European ware. Very few of the tiles now made are free from grave faults, but some blue and white made about 20 years ago, and used in the ornamentation of a 'musjid' in the city, show what good work might be turned out in Pesháwar under proper guidance. It is impossible to give any idea of the amount of art pottery actually sold here, but there is no doubt but that the greater care taken in other cities in India in weeding out bad forms has caused a falling off in the demand for Pesháwar ware." Mr. Kipling also notices that the workmen are turning their attention to jugs, tea-pots, &c., of European form; but he remarks that the local clay is not strong enough to allow any but thick and unsatisfactory copies to be made. He says:—"It is certainly not by attempting to copy delicate English modern ware that any improvement can be brought about. The materials are only capable of large and simple treatment. The present potters are incapable of good oriental patterns, and their scheme of colour is limited. With the co-operation of a good pattern draughtsman or 'naqásh,' who would paint the large and flowing arabesques for which the colours are suitable, and the addition of the easily acquired dark and light blue of Mooltan, the manufacture might be greatly advanced along its own natural lines."

41. **Delhi Pottery.**—The writer of the Delhi report was probably ignorant of the fact that that district contains a noticeable variety of art pottery in the white "porcelain" work which is now established there. He incidentally notices the fact that powdered "burbura" (disintegrated felspathic rock) mixed with "gond" (gum) is moulded into dishes, vases, &c., and goes under the name of "kám chini." But this is noted in "Punjab Manufactures," II, 227, and the district report has not attempted to supplement that note by giving particulars as to the outturn, number of workmen and present style of work. From Mr. Kipling's contribution to the Delhi Gazetteer it appears that though "burbura" has long been used in the manufacture of "martabáns," "dawáts," &c., it has only come into general notice during the last 20 years. The ware was exhibited in the London Exhibition of 1870, "when its fine texture of glaze, a rough duck-egg like coating, was admired by connoisseurs." Since the European demand arose new forms have been introduced, but "lack of enterprize and ignorance of the possibilities of the art have prevented it from being largely developed. The workmen have been dragged into notice with apparent reluctance, and do not cordially accept opportunities of making money. The ware, from the fact of the 'paste' being an artificial one, *i. e.*, compounded of powdered stone and gum, and not a natural clay, has to be made in moulds and cannot be freely handled and made in great variety of form on the wheel. It

is curious that so little has been done to improve the paste, as true China clay is found not far from Delhi, and is used habitually by the gold and silver-smiths for their crucibles.". But this kaolin is not used by the Delhi potters, who are ordinary Hindu "kumhárs," for "the Delhi pottery in slackly burnt samples is almost pure sand, and can be rubbed into holes with the finger nail where the glaze does not hold it together. A mixture of the kaolin with the pounded stone ought to result, if it were sufficiently fired, in a good porcelain. As it is, in some of the best pieces the 'body' is semi-translucent. Blue and a pale green are the colours used for decoration. The patterns are poor in design, and though the general air of the product is delicate and pretty it has a somewhat sickly quality, happily described by a connoisseur as 'anæmic,' when compared with the fullness of colours and richness of pattern of Mooltan ware."

It may be remarked that kaolin is also found in the Himalayás, there being considerable deposits—for instance, in the Mandi State, which has been tested and found fit for pottery work. But there is no demand for pottery in the neighbourhood, and this kaolin could only be worked for export. A factory on a fairly large scale would have to be started, and it is not probably worth while to spend money on such an undertaking.

B.—Glazing.

42. Glazing districts in which the industry exists, and number of workmen.—The bulk of the pottery made is water vessels, and these require no glazing. Domestic vessels are seldom glazed, and, as a rule, no glazing is ever done except in the case of "martabáns," "rikábís," "piyálás," "chillams," "díwás," ink-pots and 'huqqás." Only 9 districts have any manufacture of glazed articles, and in each district the manufacture is represented by only one or two men as the following list shows :—

Karnál.—Has 2 men at Pánipat who can glaze and colour, and a few men who do a very rough kind of glazing.

Jullundur.—One man, Muhammad Shárif, can glaze in colours.

Gurdáspur.—Three men at Batála use a dark brown glaze for ink-pots, &c.

Siálkot.—Four Kashmíris turn out coloured and glazed ware.

Gujrát.—One man, Umra, glazes in white, red or green colours.

Gujránwála.—Three makers of glazed and coloured ware.

Ráwalpindi.—Ornamental tiles and flower-pots and other ware is glazed and coloured : said to be 40 men in 23 shops.

Dera Ismail Khan.—Three men from Mooltan started glazing during the year.

Hoshiárpur.—One man at Tánda colours and glazes.

There is also a man in Dera Gházi Khan who can glaze, but he has given it up, because he says he has had glazed ware on his hands for 3 years, and is still unable to dispose of it. Some of those who know how to glaze are extremely jealous of their secrets, as, for instance, the Mooltanís at Dera Ismail Khan, who work with locked doors, and allow no one to enter till they have concealed the materials used. There was a man in Ferozepore who knew how to glaze, but he died last year without imparting his secret even to his brother, who lived next door to him, and glazing in Ferozepore has died out with him.

43. Glaze used.—The ware glazed is the common ware described under "Rude Pottery," and from the information given it appears that the ordinary glaze is simply "kánch," and that the lead glaze described in "Punjab Manufactures," is used only in Siálkot and Gujránwála, and in the Jails where glazed goods are made. The Hoshiárpur glaze is turpentine and mustard oil, and "ganda biroza" (resin of *Pinus longifolia*), and oil is used in Gujránwála and Karnál, while the rough glazing mentioned in the Karnál report is produced (simply by rubbing on mustard oil with a piece of cotton wool, and rebaking the ware. The insides of vessels are coated in Pánipat with "chapra," (shell lac.)

44. Colours.—English colours and aniline dyes bought in the bázár are largely used, but colours are also obtained as under:—

White.—From chálk and gum—the glaze being applied over this. Chalk sells for 16 sérs per rupee.

Black.—Ink is used, or the ware is blackened in the kiln as described under "Rude Pottery." "Rasaut" (the juice of the Indian barbery) is used in Hoshiárpur, and "kájal" (lamp-black) in Pánipat. In Gujránwála 8 parts of lead with 1 part of tin are reduced to ashes, and 2½ parts of a crystal ("bilour") are added as a powder: with each sér of this mixture ¾ sér "anjáni" (oxide of manganese) is mixed, and the whole is melted: after cooling it is reduced to a powder and applied to the vessel in a paste of "maida" and gum.

Red.—"Banni" is commonly used. "Sandúr" (oxide of lead) is occasionally applied, and in Gujrát the colour is obtained from "lohe ka mail."

Yellow.—Obtained by use of "hartál" (sulphuret of arsenic) which can be bought for 8 annas per sér. In Gujránwála 1 chitták tin and 1 sér lead are reduced to ashes and mixed with 1¼ sér powdered "bilour": this is melted, cooled and powdered before application.

Sharbati.—(Orange or pale yellow) is got in Karnál and Gujrát by applying "hiramji," a coloured earth.

Green.—Obtained from oxide of copper or verdigris (zángár, támbe ka mail).

Vermilion.—From "shingraf" (red sulphuret of mercury), which sells for 10 tolás per rupee.

Blue.—From "anjáni" (selling at 4 sérs per rupee) and "shingraf," mixed in equal parts.

Brown.—Is obtained in Gujránwála by the mixture of "kánch" and flour with gum, and in Gurdáspur from "kánch" and borax.

A mixture of lead, "kánch" and borax is used by one man in Pánipat to obtain "a shining gold or silver colour."

45. Method of applying colours and glazes.—Gum is generally used with the colouring matter, though it is sometimes replaced by "máyá"—water in which rice, wheat or quince seeds have been boiled. Some colours are applied mixed with the "kánch," in which case the vessel is baked at once: others are applied separately, and the "kánch" is then coated over the colour before baking. In all cases only one baking is required, the ware not being baked before glazing as in England. In baking a regular kiln is required, and care has to be taken to place the ware so that it does not stick together. "Oplás" cannot be used, and the firing must be done with wood.

46. Trade in glazed ware and condition of industry.—Owing to the small local demand glazed ware is exported from the places where it is made. But glazing is usually practised by ordinary potters in addition to their usual work, and the total outturn and the amount exported is small. Prices range from 3 to 6 pies for a "díwa" to 1 or 2 rupees for a flower-pot. The profits appear to be little higher than those of rough pottery, though in Gujránwála they are as high as 10 annas per diem. On account of the very small native demand for glazed ware (roganí bartan), the man who has started in Dera Ismail Khan is said to have made no profit as yet, and any one who started elsewhere would probably have a similar experience. If the well-to-do natives require something better than the common unglazed pottery, they do not go to the local makers for glazed ware, but buy imported china. Hence glazing is not an industry that will increase in extent: it is more likely to die out, except in so far as it is kept alive by the supply to the Commissariat Department of cheap "gamlás" and the like.

JAIL POTTERY.

47. Jail Pottery.—Pottery is made in a very few jails, and jails, as a rule, simply supply their own requirements in glazed and unglazed vessels. Lahore supplies other jails besides itself, and the Commissariat Department at Mián Mír was formerly supplied with pottery by it, but since 1882 has obtained its requirements from a potter at Jullundur.

Two men usually work together, and they are said to make in one day 7 "surāhís," 20 "gharás," 100 "tinds" or 700 "piálás." About 50 per cent. of the selling price of the ware is reckoned as profit at Lahore and Ferozepore. The work is more carefully done than by the common potters, and the process followed in glazing, &c., are those collected by Abdul Ghafur in a Manual for jail use. The materials used for glazing and colouring differ in many cases from those in ordinary use, but I have not noticed them in detail, as this report deals only with the methods actually followed by the potters of the Province.

C.—The Manufacture of Toys.

48. Manufacture of toys.—The number of toy-makers (khilauna banánewale) is greater than that of persons employed in the manufacture of Art and glazed pottery, but toy-making is not a regular trade followed by any person as his sole means of subsistence. The sale of toys is chiefly carried on during Hindú "melás," and the maker prepares at a time only as many as he thinks will suffice to meet the demand at the fair at which they are to be sold. When a fair is approaching he and all his family set to work, the women and children helping in kneading the clay, filling the moulds, arranging the oven, and so forth, but when the fair is over the toy-maker returns to his regular employment, which is most often that of an ordinary potter. Toys are usually made in the figures of gods, men and animals, and the manufacture is therefore entirely in the hands of Hindús, for the Muhammadan is forbidden by his religion to make images.

49. Number of toy-makers and places where the industry exists.—The number of toy-makers and the places where they work are as under:—

Ambala.—195.

Hissár.—2 at Bhiwáni and 2 at Hánsi.

Rohták.—1 at Jhajjar and 1 at Sohána.

Gurgáon.—4 at Rewári.

Delhi.—25.

Karnál.—6 families at Karnál, 15 families at Pánipat, and 1 family at Kaithal.

Hoshiárpur.—10 at the Sadar, 5 in Anandpur, 3 in Dasúya and 2 in Tánda.

Jullundur.—24.

Ludhiána.—58 persons (including women and children) in Ludhiána, Jagráon and Machiwára.

Moolían.—20 in the Sadar, and a few makers in the villages, who do not glaze or colour their toys.

Lahore.—300.

Amritsar.—About 25 families.

Gurdáspur.—Toys are made at Batála and Kalanaur.

Siálkot.—15.

Gujránwála.—6.

Ráwalpindi.—1.

Toys are also made in Ferozepore and Muzaffargarh: in Dera Ismail Khan they are not made, but bought without ornamentation and coloured and glazed. The number of toy-makers is thus between 500 and 600, of whom 300 carry on their business at Lahore and 195 in Ambála. These are all Hindús, but particulars as to castes are only given in the Siálkot report, which states that the toy-makers in that district are all Khattrís. The name "Kúzagar," which is applied to the maker of the better sorts of pottery, is also used to denote toy-makers.

50. Clay used and method of manufacture.—The clay used is of the common varieties (the more tenacious kinds being preferred), but it is not made so soft as for pottery work.

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Toys are made on the wheel, by hand or in clay moulds. The wheel used is sometimes a little lighter than the ordinary pottery wheel, and it is used to shape the round bodies of figures representing animals and men, or for turning out round toys such as those which resemble melons and other fruit. Heads and necks are made in clay moulds, which are made and baked by the potters themselves, and legs and arms are roughly shaped by hand and joined on to the trunk. Moulds are at times used for the whole toy, but most commonly for such parts only as can be detached from them without risk of breaking.

After joining together the two halves of a moulded toy, or the various pieces of a toy made in parts, an instrument called a "khurda" or "cholna" —such as is used in ordinary pottery work—is used to scrape away any inequalities in the joins, and to make the surface smooth. The toys are then smoothed with water, dried for 24 hours, and baked for a day or two preparatory to colouring and glazing. The oven is a hole in the ground, and a heap of alternate layers of toys and "oplás" is raised 2 or 3 feet high. The whole is domed over with mud-plaster, and a hole is left down the centre for the application of the fire. If damaged during or after baking, the pieces of a toy are stuck together again with baked clay, powdered and mixed with gum, and the toy is then coated with chalk and gum or water. When this is dry, the pattern to represent the clothes, beard, &c., is roughly traced, and colours, ground and mixed with water or gum, are applied with a brush of squirrel's or camel's hair, or with a feather. The methods in which the various colours are obtained have been described under glazing. Dyes and colours bought in the bazár are, however, most commonly used.

51. Glaze used for toys.—When the painting is complete glaze is applied over it. Where pottery is glazed, toys are glazed in the same way as the pottery, but the most common glaze for toys is a mixture of about 4 chittáks of "ganda biroza" (resin of *Pinus longifolia*) with 1 tola of mustard oil or some other oil. But chalk mixed with oil or gum, or with oil and turpentine, is also used, and occasionally a "kánch" glaze is applied. The cheapest glaze is that composed of "ganda biroza" and oil—each of which sell for about 4 annas per sér—and hence it is the most common. After re-baking the toys for the glaze, they are ready for sale, though further decoration can be effected by sticking on bits of artificial gold leaf ("warq chándi") to represent the trappings of horses, turbans, &c.

52. Price of toys and profit.—The price of the simpler toys depends on their size—3, 6 and 9 pies apiece being given for small, medium and large figures, but the amount of elaboration in their ornamentation causes the price of the best toys to rise to 1 or 2 rupees apiece. The makers sometimes sell toys to dealers for Re. 1 per cent.

A man can make 25 to 30 large, and 40 to 50 small toys in a day, his profit being $\frac{3}{5}$ or $\frac{2}{3}$ of their selling value. In Lahore the profits are said to be 4 annas per diem, but in other districts the average is higher, and is 6 or 8 annas per diem, though as the work is only carried on from time to time to meet temporary demands, as much as 12 or 13 annas are sometimes made per diem during the time spent in toy-making. The toy-trade at Lahore is probably a regular one,—as is indicated by the larger number of men employed,—and regularity of employment would account for the comparatively low rate of profit.

53. Trade in toys.—Judging from the figures given in a few district reports the expenditure on toys is fairly considerable. Thus in Jullundur toys to the value of Rs. 600 are locally made and sold in the year, and Rs. 200 worth are imported from Lahore and Delhi; in Ráwalpindi 6,000 toys, valued at Rs. 350, were made last year, and in Ludhiána Rs. 100 worth were sold; Lahore with its large number of workmen probably exports toys to other districts (no information is given on this point in the report); but as the industry is spasmodically carried on to meet temporary local demands there is no export from other districts. No trade with places outside the Punjab is reported.

54. Character of toys made and condition of the industry.—The toys made are extremely rough; it is with difficulty that one perceives what each is meant to represent, and both form and colour are very inartistic; a few

figures are shown in Plate IV. Efforts are being made in Amritsar to educate the taste of the public by the distribution of good plaster casts, but an invitation to the toy-makers to attend the Normal School met with no response. The toy-makers said they would come if assured of larger profits than at present, and had no doubt correctly guaged the popular taste for cheap and gaudy articles in preference to those which exhibit greater artistic beauty at a higher price. Europeans have not influenced the fashion in toys, except by furnishing models for the grotesque figures that abound of Sáhibs and Memsáhibs, soldiers, policemen, and the like, and the terra-cotta figures made at Ambala by an old man named Husainí are copies, made in moulds, of English models bought in the bazár, but he makes very few of them, and depends chiefly on his work as a potter, for he has no market for his goods. A notable use to which the skill of a toy-maker in Delhi has been turned is in making terra-cotta models of snakes, copied from the plates in "Thanatophidía" and other books which are beautifully made and coloured. The present style of toy is characteristically Indian and must remain unchanged till the "zamíndár" and other buyers of toys have acquired some of the rudiments of artistic taste. Under the conditions in which the industry is carried on it is unlikely to increase in extent, but, on the other hand, the import of cheap German and other European toys of wood and tin is said to be making its influence felt, and the native industry, small as it is at present, appears to have a still more restricted future before it.

III.—Glass.

55. Glass manufacture.—The manufacture of glass in the Punjab is divided in two branches, *viz.*, the manufacture of glass bangles called "chúrís," and the manufacture of bottles, chimneys and other articles. Nearly all the glass-workers in the Province are "chúrígars," and they are found in 17 districts.

56. Glass used, whence obtained or how made.—The glass of which "chúrís" are made is called "kánch," but its composition varies, because the materials out of which it can be made, and which can be locally obtained, are various. Glass-workers in Ambala, Siálkot, Amritsar and Lahore prefer to import their "kánch," and can get it from Delhi, Agra or Mainpuri at Rs. 2 or or 2-8 per maund. In Hissár also "kánch" is not made, but old glass, "kánch" and broken "chúrís" are bought up at Re. 1 per maund and re-melted for use. The commonest way of making "kánch" is that of mixing together equal parts of powdered sandstone and "sajji" (carbonate of soda, usual price Rs. 3 to 4 per maund) and melting them together. This is the method followed in Lahore, Jhelum and Pánipat (for "chúrís") and also in Mooltan and Dera Gházi Khan, which both get their stone from Sakhi Sarwar: it costs Rs. 2 per maund in Mooltan. But Jhelum, like Lahore, is taking to importation from Delhi; for though both sandstone and "sajji" are obtained locally, it is found that the large amount of firewood acquired for the manufacture renders the local "kánch" more costly than the imported. In Gurgáon "reh" is mixed with saltpetre and heated for one night over a slow fire, after which it is subjected to fierce heat for a day.

Rohtak "chúrígars" use an alkaline earth found near Wazírpur and Báblí in Gurgáon, and which costs them nothing but carriage. "Kánch" is made from this by simply mixing it with water and heating it.

In a maund of the "kánch" used in Hoshiárpur there are the following materials: 3 sérs of "sajji" are pounded with 2 sérs of quartz and mixed with water. This mixture is made into balls (pinnás) which are heated to a red heat and then cooled and pounded. 1¼ sérs borax, 1¼ sérs saltpetre, and 1¼ sér "kallar" is mixed to the powder thus obtained, and the whole is put into the furnace in an earthen vessel, and after 3 days' heating it forms "kánch." Borax cost Rs. 5 per maund, and saltpetre Rs. 8 per maund.

The Kángra "kánch"—which, like that of Hoshiárpur, is used for bottles, &c., besides "chúrís"—is made from a mixture of lac, charcoal and "sajji," and in Pesháwar the glass, also used for bottles, &c., is made from European glass, tin, copper, zinc, "sajji" and lead.

The finer kind of glass used at Pánipat is made, as described in "Punjab Manufactures," II., 237, of red sandstone, "sajji" and saltpetre.

57. Furnace used for glass-work.—The method of working "kánch" and the description of furnace and tools used is uniform. The furnace (see Plate V) is "pakka" and built partially underground. It has a dome above the ground level which is pierced by 4 or 5 openings. Inside each opening a bracket or ledge of earth is built against the wall to serve as a rest for the crucible (bárá) in which the "kánch" is melted for use. Screen walls run out from the dome, so as to form a separate compartment before each opening, and each compartment is used by one workman. Before the spot where the workman sits, a stone slab, called "patri," is fixed in the ground, and in front of this again there is a sink. As great heat is required, the furance is always fed with wood—kikar and farrásh being preferred, and costing about Re. 1 for 2½ maunds.

58. Instruments used in glass-work.—The instruments used in glass-work are described in "Punjab Manufactures," and are represented in Plate V. They are—

1. "Ankri" or "kundi."—An iron rod about a foot long, with a curve or hook at the end.
2. "Sínkh" or "sallákh."—A long pointed iron rod.
3. "Mála."—A narrow iron bar (not a spoon).
4. "Trakla," Tarkla" or "Tirkla."—An iron rod which has a thick butt and tapers off to a point. Called "phala" if fitted with a handle.
5. "Kálbút," a cone of clay fixed on the end of an iron rod. The whole instrument is called "salendhi," "sarkandi" or "sarbandi," and the clay cone is known as "kalbút.

An iron spoon ("kharcha" or "kharchi"), tongs and bellows are also necessary articles in a glass worker's outfit, as well as the "náli" or blowpipe, and "thappas" or stamps are sometimes kept for the purposes of impressing patterns on "chúrís" as afterwards described.

59. Method of making "churis."—To make "chúrís," the furnace is heated and a crucible filled with powdered "kánch" is placed on the ledge inside. When the workman—by testing with an iron rod—finds that the a "kánch" has melted into a thick viscous liquid, he takes up enough to form add "chúri" on the hook of his "ankri." The "kharcha" is used, if necessary, to powdered "kánch" to the crucible in place of that just extracted. The "ankri" is held in the right hand, and the "kánch" upon it is wound round the "sínkh" which the workman holds in his left hand. A thick ring is thus formed, which is slightly cooled and detached by resting the "sínkh" on the "patrí" and striking it gently with the "mála." The ring is then put on to the end of the "takla," which is put to the furnace through the opening before the workman, and as the ring is heated it is twirled round and round on the point of the "takla," so that it becomes thinner and larger. When the ring has opened out sufficiently, it is transferred to the "kalbút" which is rested upon the "patrí" and spun round. The "takla" is used to adjust the "chúrí" upon the cone, and when the hot ring has reached the required size it is slipped off the "kalbút" into the sink of water.

60. Method of coloring "kanch."—"Chúrís are sold either plain or ornamented, and plain "chúrís" are made of various colors. The colour is obtained by using colored "kánch" or by coloring "chúrís" of white "kánch" after manufacture. The imported "kánch" which is sold can be had of all colours, though green, yellow and white are preferred. When "kánch" is locally prepared, it is colored by adding lead and "qalái" to the materials used, with copper filings for green and "anjáni" for purple. The amount added to one maund, while "kánch," for each color is as follows:—

For "Asmáni" (sky blue)	10 chittáks copper
„ "Uda" (purple)	10 „ "anjáni."
„ "Zard" (yellow)	8 sérs lead, 2½ sérs tin and 12 chittáks quartz.
„ "Sabz" (green)	½ sér copper, 2½ sérs tin and 8 sérs lead.
„ Red	½ sér copper, ½ sér iron filings and 4 sérs black "kánch."

61. Ornamentation of "churis" by "churigars"—"Chúrígars" as a rule simply make plain "chúrís," but they also practise one method of ornamentation, which is thus described in the Siálkot report:—"The rims of "chúrís" are ornamented by heating them and melting fine rods of glass and applying them. These rods are made by taking some melted "kánch" on the hook of the "ankrí," and drawing it like wire. They are made about 3 feet long and about $\frac{1}{16}$ of an inch thick, of different colours: sometimes black and red or black and white "kánch" are drawn together and twisted so that when it is laid on the rims of the "chúrís" it gives them a dotted appearance, black and red, or black and white dots alternating. These rods are called "sar," and this kind of ornamentation is done at the furnace by the workmen."

62. Cost of manufacture of "churis," profit and wages.—A workman can make an average of 400 large or 600 small "chúrís" in a day, though if he be expert he may make as many as 1,000 large and 1,500 small ones. Twenty sérs of "kánch" give from 4,000 to 5,000 "chúrís" and require about 2 maunds of fuel, and though with the different methods of making "kánch" the cost of manufacture varies, it is on an average from 4 to 8 annas per 1,000 "chúrís." The wholesale price realised by the "chúrígars" is from 8 to 12 annas per 1,000 and a workman's profit may thus be reckoned as 2 annas per diem or more, in proportion as he is more skilful. The district reports give estimate at from 2 annas to 8 annas per diem.

In factories in large towns, master workmen employ journeymen, but only two reports give particulars of the average wages. In Mooltan, where the master's profits are estimated at from 5 to 12 annas per diem it is said that journeymen get 2 to 4 annas per 100 "chúrís," but as the daily average outturn there is stated to be from 400 to 600 per man, this would amount to a wage of from 8 annas to Re. 1-8 per diem and as the price of "chúrís" is only 6 to 8 annas per 1,000 this must be a mistake. The Siálkot report—a very careful one—states that a hired workman is provided with a house, materials and tools, and gets $\frac{1}{3}$ of the value of the "chúrís" he makes, so that a good workman if he makes 1,000 to 1,500 "chúrís" selling at 9 annas, can earn 3 annas per day.

63. Numbers of "churigars" and places where the industry is carried on—The accompanying table gives particulars, according to the district reports, of the number of "chúrígars" and the localities in which the industry is carried on:—

No.	District.	Number of factories.	Number of chúrigars.	Remarks.
1	Hissár	...	...	Manufacture limited—no particulars as to numbers.
2	Rohtak	2	30	Factories at Dawalah and Rankandah—90 persons are supported by these works.
3	Gurgáon.	2	40	The two factories are at Sohna and employ 10 men each. The other glass workers are distributed over 4 or 5 villages.
4	Delhi	...	...	No statistics given. The report refers to the glass industry, thus "Looking-glass making is fully described in Mr. Baden-Powell's Manual, page 239, and there is no necessity of repeating here. No more information can be furnished here." But "chúris" are said to be made in Delhi, and are certainly sold in large quantities, and they are also exported to other districts.
5	Karnál	...	...	In addition to other glass-work at Pánipat "chúrís" are made—no statistics given.
6	Ambálla	...	...	The report says there are 256 Musalmán and 91 Hindu Maniárs in the district, but also says that very little glass-work is done. The figures given are very doubtful.
7	Kángra	15	50	"Chúrígars" also make bottles, glasses and "chorpánís"; work a Sujánpur, Nádaun and Mair in Hamírpur tahsíl and some places in Núrpur tahsíl.
8	Hoshiárpur	...	...	Best work at Dasúya, where cups, glasses &c., are made, of coloured "kánch"; glass-work in seven villages altogether.
9	Mooltan	8	58	.....
10	Lahore	8	61	Figures given for "chúrígars" alone: in addition there are three shops of chimney-makers employing six men.
11	Amritsar	...	...	"Chúrís" made—no details in report.
12	Siálkot	...	...	160 persons (including women and children) depend on glass work.
13	Jhelum	7	28	All the work done in the village of Sultánpur.
14	Ráwalpindi	29	83	Glass work in Baigan village, Tahsíl Gujar Khan.
15	Peshawar	...	...	Greater part of work in one man's hands. He makes other articles in addition to "chúrís," but only occasionally.
16	Dera Ismail Khan.	4	24	
17	Dera Gházi Khan	9	31	

The statistics given are incomplete, but they show that the number of persons employed in "chúrí" making is very limited, and probably not more than 700 or 800.

64. Factories.—Except in Rohtak, where two factories apparently employ 15 hands apiece, there are no factories employing more than 10 hands. But co-operation is the rule in the industry. The fuel used in the furnace is wood, and a large amount is required, while it takes no more to melt the "kánch" for several working together than for one man. Hence the industry exists only in towns and large villages, the average number working at one furnace, being 5, who are either partners or workmen paid by the furnace-owner. The furnace, as described above, is built with several openings to accommodate several workers at one time, and if a man works by himself without help, he does so in a very rough way, using a grain parcher's oven instead of a regular furnace.

65. Employment of women and children.—Women and children are never employed in glass manufacture in any capacity whatever. But women are often connected with the distribution of the manufactured goods, for they frequently buy them to retail in the "zanánás."

66. Retail sellers and price of "churis."—"Chúrígars" sell their plain "chúrís" to retail dealers—chiefly "Maniárs" or "Bangiárs" who ornament them and take them into the villages for sale. The "Maniár" gives 8 to 10 annas per 1,000 for plain "churis," and spends 12 to 15 annas in ornamenting them. He then sells them by the "jora" or set of 36, or by the hundred or dozen. Sets, if plain, cost 2 or 3 pies, and 1 or 2 annas if decorated, but the price, of course, varies with the quality of the goods; plain "joras" sometimes sell for 2 annas and decorated "joras" at 4 or 5 annas, while if the ornamentation is done very well, a pair of "chúrís" may cost from 1 to 4 annas. On the whole, the hawker's profit appears to be about 4 annas per rupee.

67. Method of ornamenting "churis."—"Chúrís" are usually ornamented by heating them over a charcoal fire and coating them with lac. "Shingraf" is used for red and charcoal for black, and the color is powdered over the lac and adheres to it. Sometimes sticks of the adhesive matter mixed with the colouring matter are made up, and applied to the "chúrís" after heating. "Poth" (beads) "mina" (scraps of coloured glass) and tin foil may be stuck on after the lac and colour have been applied.

A way of ornamenting "chúrís," which is sometimes followed, is to lay on a coat of sealing wax, and cover this with gold or silver foil—which is then brought out in relief by means of dies or "thappás" of different designs.

68. "Churigars" caste, &c.—"Kánch" bangles are usually known as "chúrís," but in Mooltan and some other districts they are called "vang." The bangle-maker is always a Mussalmán (Hindús are mentioned in the Umballa report only), and according to the local name for bangles, he is called either "chúrígar" or "vangrigar." It appears that he occasionally is not paid for "chúrís" supplied to a girl before marriage, but at the marriage gets about 1 rupee 4 annas and a suit of clothes. This method of payment seems to show that the "chúrígar" is looked on as a sort of "sepi," but it is very uncommon. "Maniárs" or "Bangiárs" and "Kachers" are found as "chúrí" makers, but the former are rather retailers of goods obtained from "chúrígars." When the demand is slack—as in Kángra—the "chúrígar" is not able to live entirely by his trade and has to resort to agriculture or some other means of support. But in the Punjab plains the demand is large and not likely to fall off; the only thing the "chúrígar" has to fear is the competition of cheaper and better goods imported from the North-West Provinces, but as long as he has a good connection with the "Maniárs," he is kept fully employed at his trade.

69. Customs relating to "churis."—"Chúrís." are worn both by Hindú and Muhammadan women. Among the latter they are always worn by a bride on marriage. In the North-West Provinces all Hindús—except "Sarsut Brahmans" and "Khatris"—wear "chúrís," and regard them as semi-sacred objects, for if one should accidentally break, its pieces must be collected and kissed three times, and every Hindú woman wears "kánch" bangles till her

husband's death and she then breaks them with a brick or stone, and puts on gold or silver bangles in their place—the wearing of bangles not of "kánch" being the mark either of a widow or of a prostitute.

70. Conditions and prospects of "churi" industry.—These customs are not so strictly observed in the Punjab, but even so the "chúrí" is much worn, for it is a cheap and gaudy ornament, within the reach of the poorest and appreciated by the natives. It is not, however, probable that the manufacture will extend in the Punjab, unless large factories are established where saving in cost can be combined with an increase of quality, for the North-West Provinces manufacturers are able to undersell the local "chúrigars," and supply a better class of goods, which are readily bought. The local makers cannot compete against the importers by reducing their prices as they have to contend also against a rise in the cost of manufacture. "Sajji," most commonly used for making "kánch," has risen in price from 12 annas to 3 or 4 Rs. per maund, and wood is getting dearer then before, while the smallness of the factories offer no facilities for the introduction of appliances to economise labour and expense.

71. Trade in "churis"—The statistics given of the amount of import and export for districts where "chúrís" are made are very imperfect; for districts where they are not made, no reference is made to any import. Local demand, however, does not depend simply on local supply, for the fashion of wearing "chúrís" is widespread and capable of being gratified very cheaply, besides having some degree of religious or social meaning, and when we find that Rohtak spends Rs. 18,000 annually on them, while about Rs. 5,000 per annum is spent in Mooltán and Rs. 4,000 in Dera Gházi Khan, it is certain that there must be a large import into districts where "chúrís" are not made. But the reports make no mention of any import, and no idea can be formed of the annual value of the "chúrís" that are made in and come into the Punjab. It is, however, clear that large quantities come in from the North-West Provinces, especially from Meerut, and there is also a small import from the villages of Sanjuan and Bhimbar in Jammu, whence "chúrís" to the annual value of Rs. 1,000 are imported into Siálkot.

Delhi, Lahore and Mooltan would appear to be the chief centres of inter-district trade, and there is also some export from Panipat. Kángra sends "chúrís" worth about Rs. 1,000 per annum into the neighbouring Hill States.

72. Manufacture of glass articles other than "churis."—The manufacture of articles other than "chúrís" is carried on in six districts only *viz.*, Karnál, Kángra, Lahore, Peshawar, Hoshiárpur and Delhi. Except in Lahore it does not exist as separate from "chúrí" making, but in Lahore there are three shops of chimney-makers (chimney sáz) employing six men.

Looking-glasses are made in Delhi, and the Shahpur report mentions that they are repaired at Bhera. Looking-glasses are made as described in "Punjab Manufactures," but I am unable to give any statistics as to the trade.

The "kánch" used for bottles, &c., the composition of which has been already mentioned is either blown or moulded. Bottles are blown inside a mould which gives them the correct shape, and the mouths of bottles and chimneys are opened out, while the glass is hot, by the use of a pair of compasses. Moulds are used for glasses, cups, "garwas," &c., such as those made at Dasúya in Hoshiárpur. The articles usually made are glasses, dishes, phials for attar and scent, beads and pieces of colored glass, and "chorpánís" or shíshís. The "shíshí" is a popular toy, and consists of a glass tube terminating at each end in a bulb and enclosing a small quantity of water. The tube is narrowed in the centre by a ring of thread and the slow procession of air bubbles that ensues on reversing the tube is the point and interest of the toy," (Karnál Gazetteer). "Kum-kuma" or silvered globes are made at Pánipat and in Kángra. The method of silvering the glass with a mixture of lead, tin and mercury is described in "Punjab Manufactures," II—238. These silvered-globes are broken up, and the pieces are used as mirrors in "ársís" or spangles on cloth, but English globes are now imported and are preferred to those made here. "Huqqa" bottoms are made in Kángra for about 8 annas apiece.

73. Prices and profit.—The prices of all articles vary greatly in the different districts, but the cheapest glass work is made in Peshâwar; "chorpánís, for instance, sell there for 5 annas per dozen, while they cost Re. 1 2 annas per dozen in Kángra. The profit on bottles, &c.; is the same as on "chúrís" and is not separate from it, as bottle-makers are all "churígárs" as well. The profits of a "chimney-sáz" at Lahore are about 4 annas per diem; two workmen can turn out 2 or 2½ dozen chimneys is one day, and a dozen chimneys cost about Re. 1-13 annas to make, and sell for Rs. 2.

The best glass in the province is made at Pánipat; the glass there is of very good quality, and sells for Rs. 10 per maund. The factory employs only one skilled workman, who is paid 12 annas per maund of glass made, and is assisted by 3 or 4 men at 3 annas per day. 100 maunds of glass can be made in 25 days for Rs. 864, (the most important item in the cost being Rs. 500 for 2,000 maunds of wood), and sells for Rs. 1,000, but as the work is at a standstill during the 4 months of the rains, the average profit of the glassmaker is reckoned at Rs. 100 per mensem, while the skilled workman gets an average during the year of Rs. 50 per mensem.

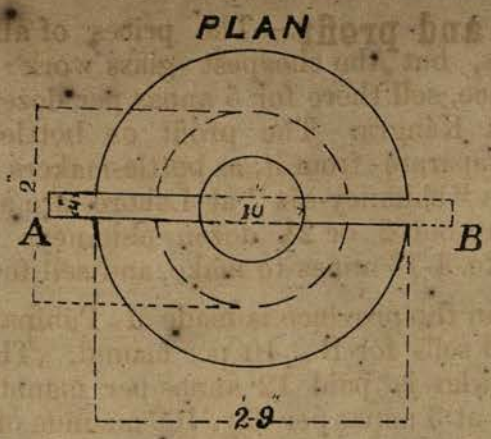
74.—Trade in glass-ware.—Very few details of import and export are given in the reports. The Jullundur report is the only one that gives a complete estimate, and from that it appears that Jullundur annually imports from Delhi bottles worth Rs. 1,860, chimneys worth Rs. 1,708, looking-glass, and panes worth Rs. 1,881, and miscellaneous articles worth Rs. 1,512, while from Lahore it imports Rs. 600 worth, of which Rs. 100 worth are buttons. Lahore last year imported Rs. 16,230 worth of glass; the place whence imported is not stated and the total import is said to have been used locally, but the glass was probably European, and a great portion of it must have been distributed over the province. The import into Delhi is perhaps greater than that into Lahore, for the figures for Jullundur would seem to show that Delhi is the chief centre of the glass trade, but no import or export is mentioned in the report.

75. Prospects of Punjab Glass Manufactures.—While rough articles are good enough to suit the purposes for which the natives require them; large and small bottles will be in demand till European goods become cheaper, but the articles made here are not of a character to compete with imported goods. The manufacture of glass can only be effectively and economically carried on, on a large and permanent scale, for the cost of fuel is one of the largest items of expense, and this can be reduced only by the erection of proper furnaces. The small scale on which the industry exists in the Punjab, and the import of good and cheap ware, render any advance in the character or extent of the local industry unlikely, and unless vitality is imported to it by the foundation of large works (of which there is no prospect) glass-making will continue to exist as one of the unimportant industries of the province, for as long as there is a demand for such peculiarly native articles as the "chúri" and the "chorpáni" there is no fear of its extinction.

SUKET:
Dated 8th February 1892.

C. J. HALLIFAX, C.S.,
Counsellor to His Highness the Rája of Suket.

PLATE I.



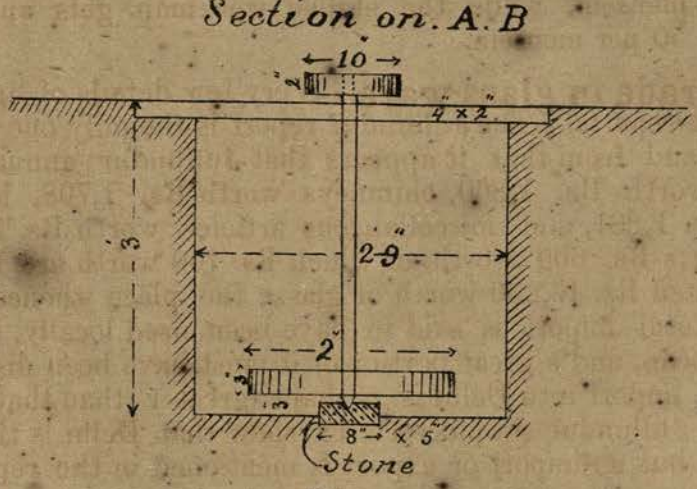


Fig. I.
(CHÁK LAKRI)

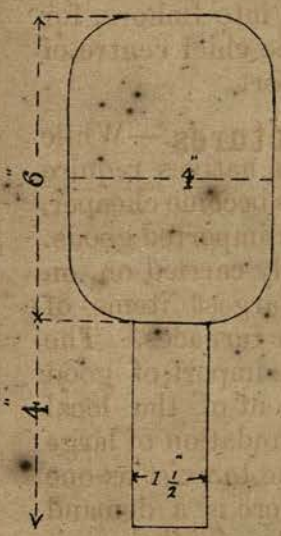


Fig. 3.
(THAIWA)

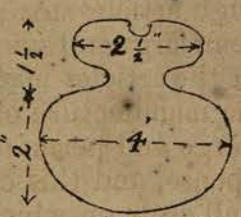


Fig 4
(KONERA)

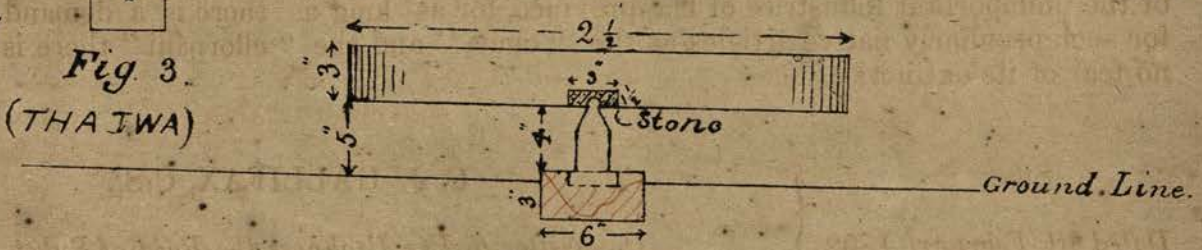


Fig. 2.
(RÁM CHÁK)

Scale 2 feet = one inch for Plan & Section.
Scale 3 inches = one feet.
Scale one inch = one feet for Section.

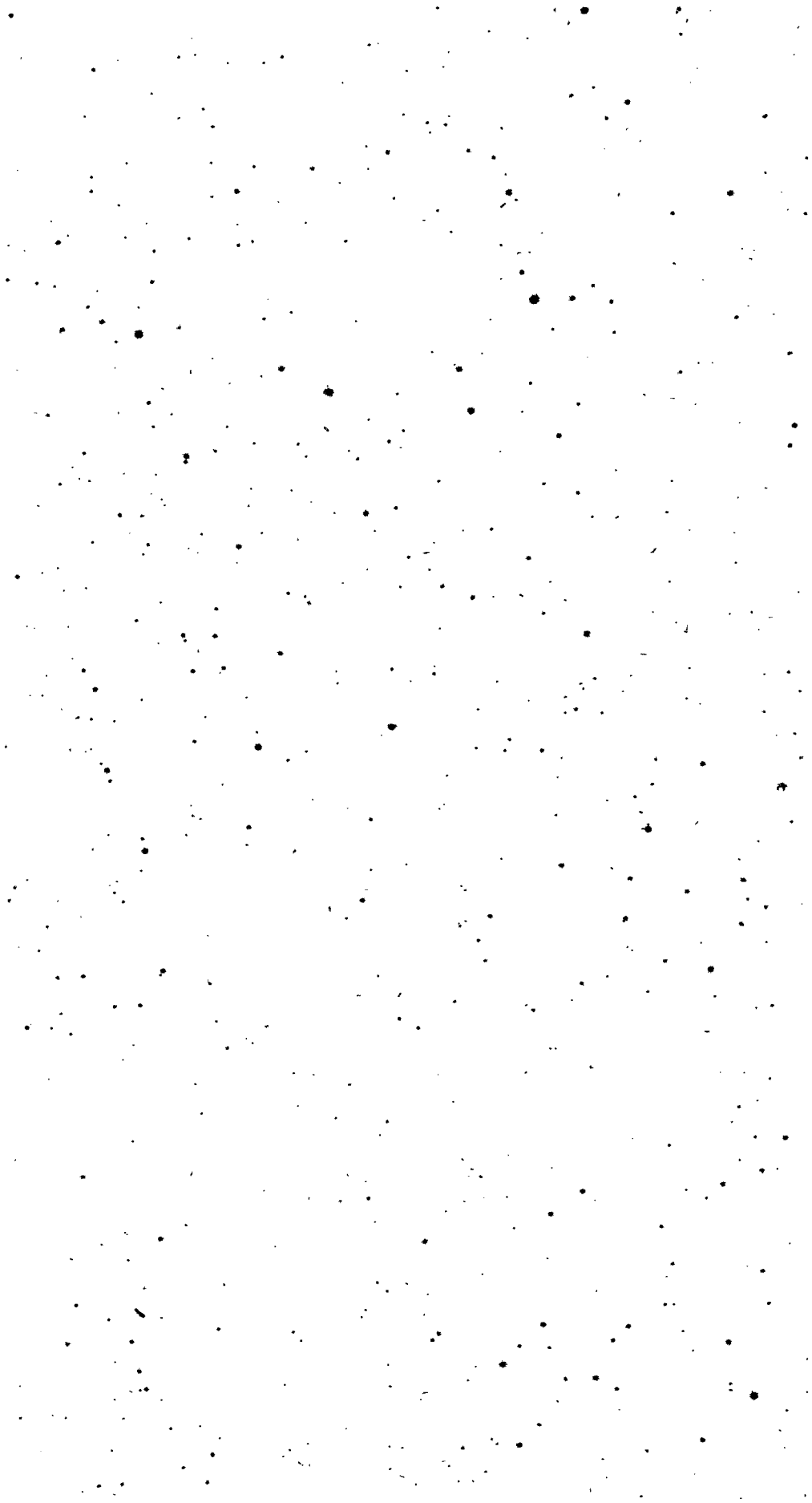


PLATE II.

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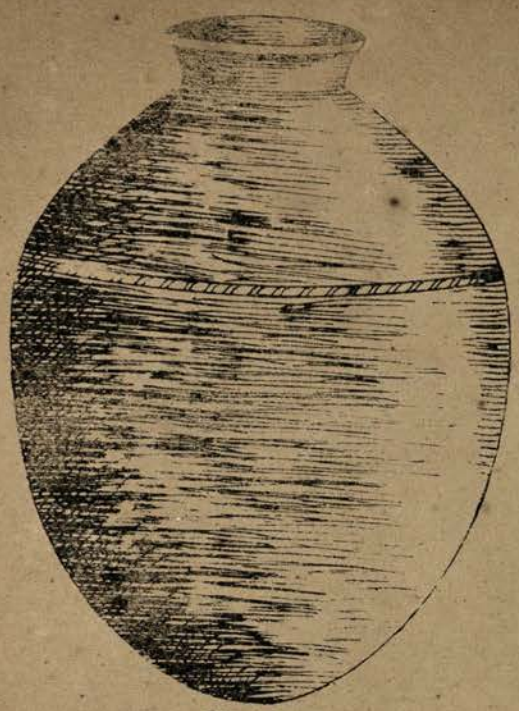

Matton

2

Cháti

3

Ghara

4

Soráhi

5

Lotá

6

Hándi

7

Tabagg

8

Rakábi

9

Piálá

10

Martabán

11

Dohná

PLATE III.

12

Maghi

13

Kullar

14.

Thathi

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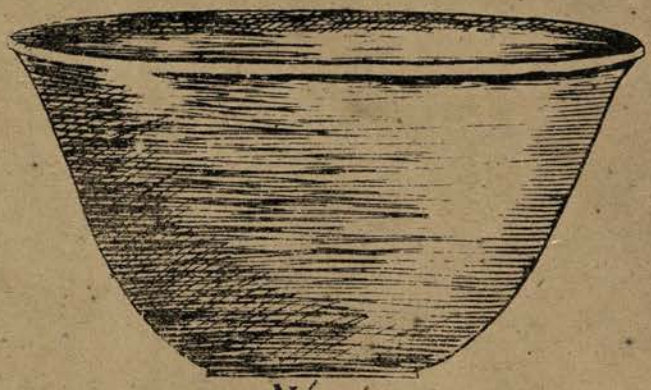
Tind

16



Nánd

17

Hukkd

18

Chilm

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Chilm

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Diwa

21

Dawát

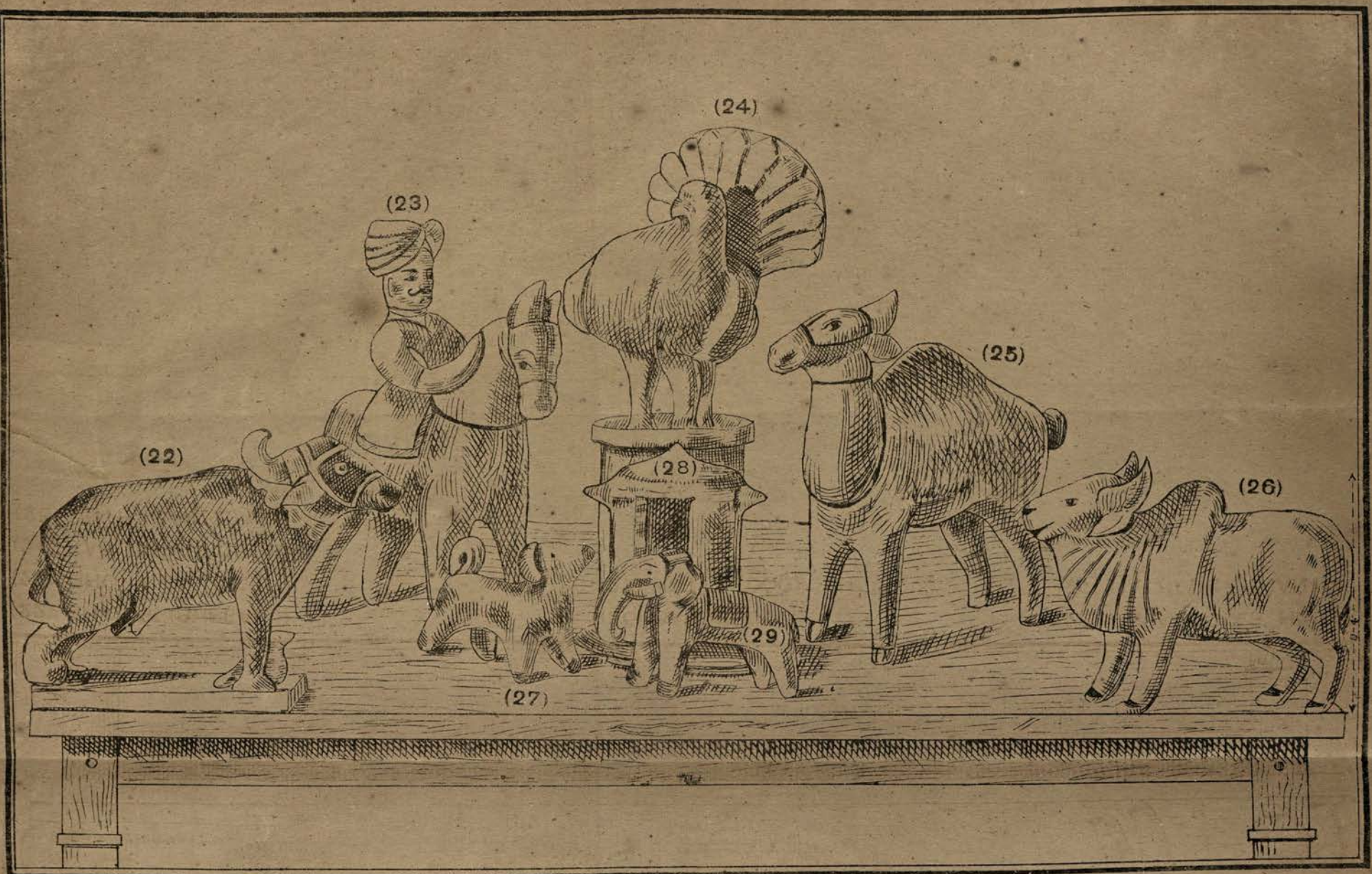
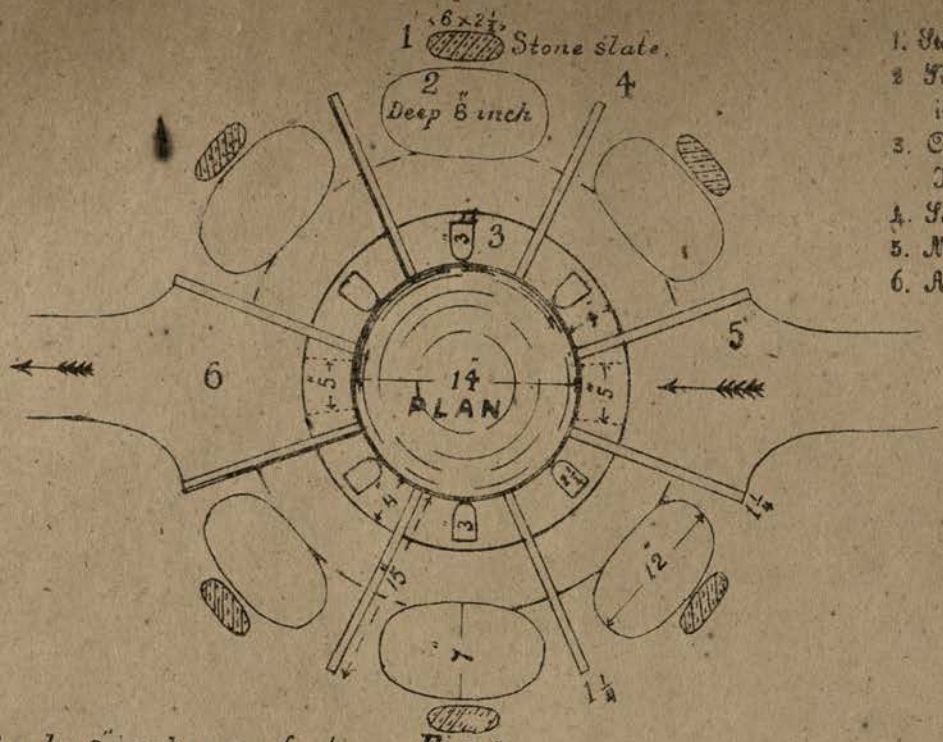


PLATE IV

(22) BHAINSI (BUFFALO)
(23) GHORA (HORSE)
(24) KABUTAR (PIGEON)
(25) UNTH (CAMEL)
(26) BALD (BULL)
(27) KUTTA (DOG)
(28) DOLA (DOLLS' HOUSE)
(29) HATHI (ELEPHANT)

PLATE V.

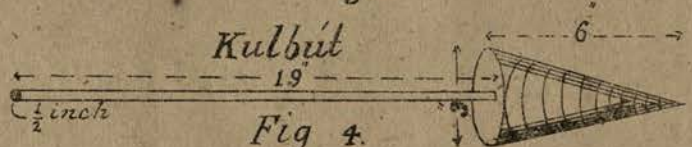


1. Stone ledge or seat.
2. Trunk for depositing the Churee into.
3. Opening through which the Kotah is used.
4. Screen wall.
5. Mouth of furnace.
6. Air passage.

Scale 2 inches = one foot for Kundi & Sikh

Fig 2.

Fig. 3.



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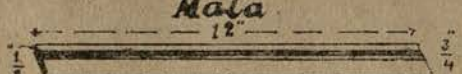

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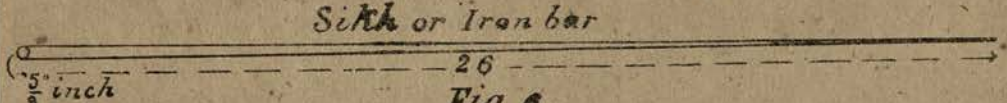

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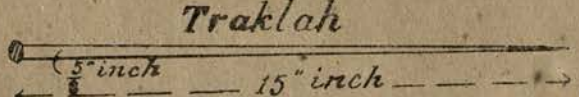

Fig 7.

Cross Section

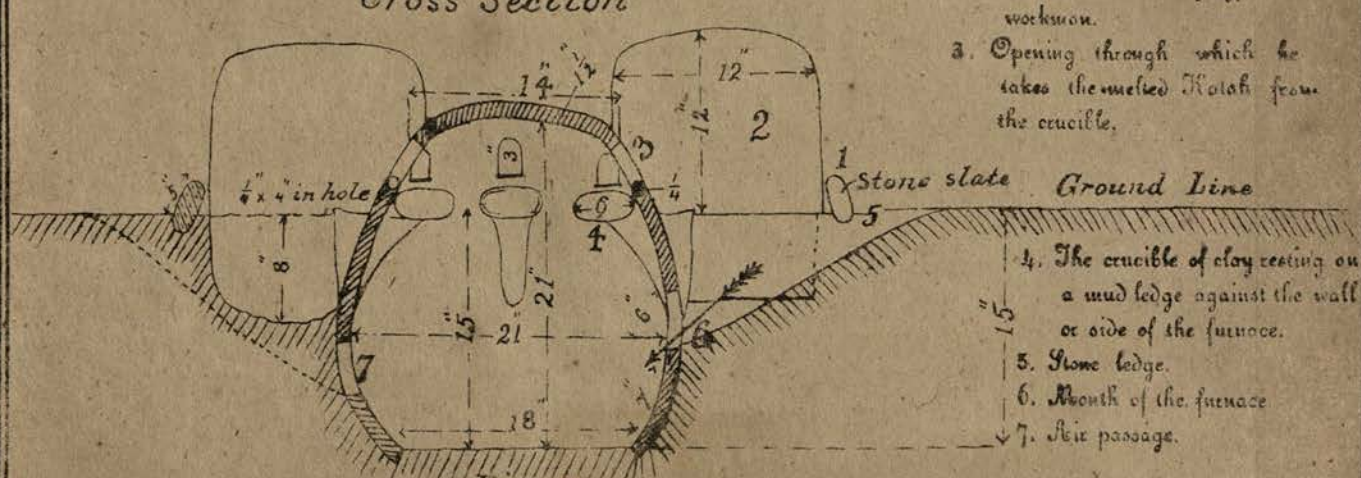

Fig 1.

1. Place where the workman sits.
2. Screen wall dividing off each workman.
3. Opening through which he takes the melted Kotah from the crucible.
4. The crucible of clay resting on a mud ledge against the wall or side of the furnace.
5. Stone ledge.
6. Mouth of the furnace.
7. Air passage.

MONOGRAPH

ON THE

POTTERY AND GLASS INDUSTRIES

OF THE

PUNJAB,

1890-91.

Published by Authority.

Price, 8 annas.

Lahore:
THE "CIVIL AND MILITARY GAZETTE" PRESS,
Contractors to the Punjab Government.

1892.

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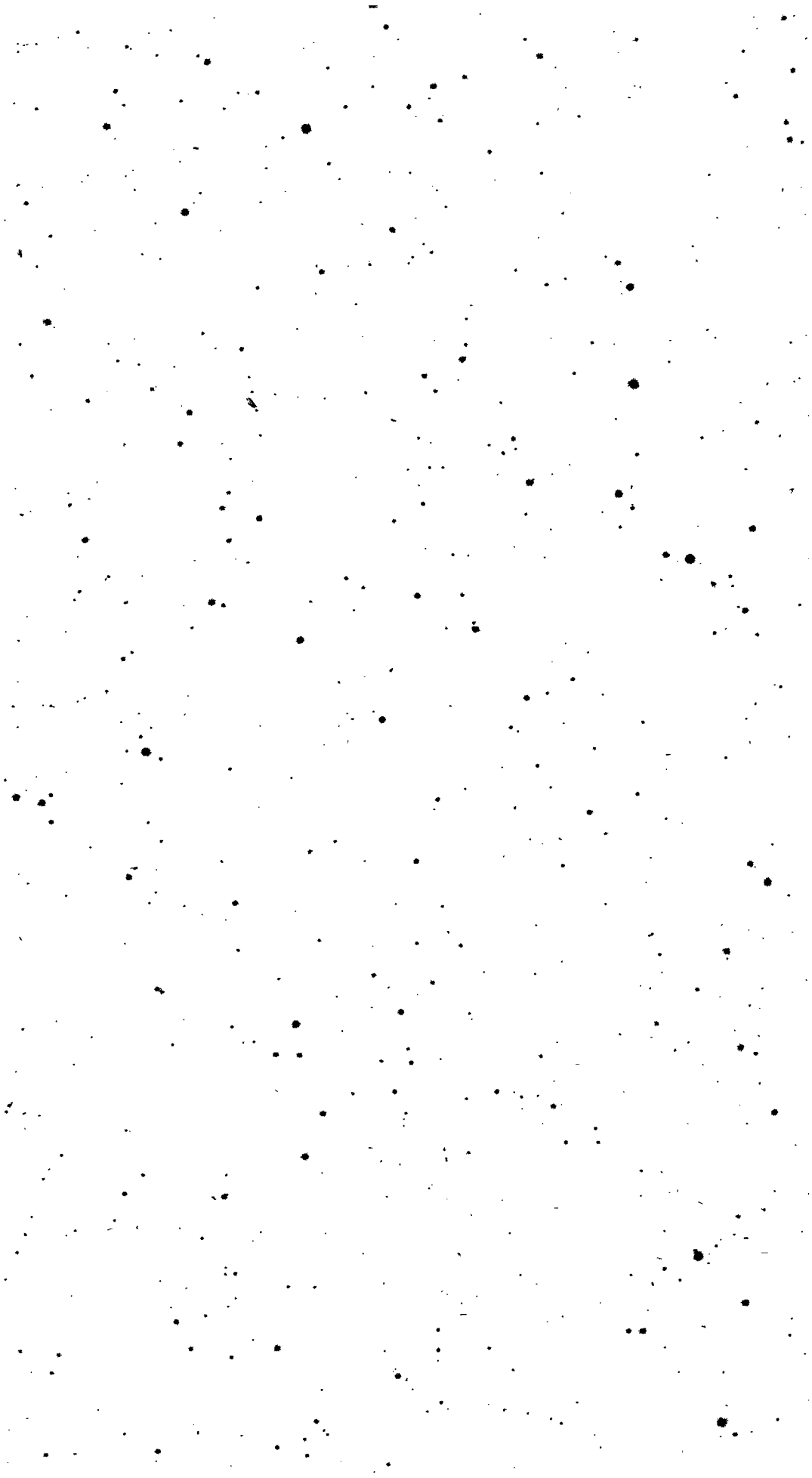

No. 473.

FROM

R. G. THOMSON, ESQUIRE,
Revenue Secretary to Government,
Punjab and its Dependencies,

TO

THE JUNIOR SECRETARY TO THE
FINANCIAL COMMISSIONER,
PUNJAB.

Dated Lahore, 10th August 1892.

Revenue and Agriculture.
General.

SIR,

I AM directed to acknowledge the receipt of your letter No. 442, dated the 9th July 1892, submitting the Monograph on Pottery and Glass Manufacture in the Punjab by Mr. C. J. Hallifax, C. S., and to say that Mr. Hallifax has compiled a number of interesting facts with great industry and care.

2. I am to add that the Report seems to have been badly treated both by the printer and the proof corrector.

I have, &c.,
R. G. THOMSON,
Revenue Secretary to Government, Punjab.

Punjab Government Press, Lahore—15-9-92—560.

NO. 442.

FROM

A. J. GRANT, ESQUIRE,

Junior Secretary to the Financial Commissioner,

Punjab,

To

E. B. STEEDMAN, ESQUIRE,

Offg. Revenue Secretary to Government, Punjab.

Dated 9th July 1892.

SIR,

I AM directed to submit 350 copies of a Monograph on Pottery and Glass Manufacture in the Punjab compiled by Mr. C. J. Hallifax, C. S. The Financial Commissioners' instructions were contained in Circular letters No. 534 C. S. of 23rd January 1891 and No. 3373 of 23rd May 1891, and I am to say that Mr. Elsmie thinks that Mr. Hallifax has succeeded in embodying all the information at his command in a clear and useful form on the lines suggested in those letters. By far the best of the District Reports, in the opinion of Mr. Hallifax, is that for Siálkot, which was drawn up by Mr. Greenwood, Secretary of the Municipal Committee. After that comes the report for Hissar (prepared by Sardár Charat Singh), which was good.

2. The Monograph opens with a description of the various kinds of clay found in the Punjab and of the customary admixtures of certain substances such as salt, sand and coloured earths to render the clay more suitable to the purpose for which it is required. Paragraph 14 contains a description of the two kinds of potter's wheel which alone are found in the Punjab. The *râm chak* or single wheel is the lightest and commonest, but has the disadvantage of necessitating frequent stoppages of work, as it must be re-spun with the hands whenever it begins to slow down. The *chak pakri* or double wheel is much heavier, and cannot easily be moved, but being turned by the feet it allows of better and more rapid work, and is adapted for the making of larger articles. The kilns for firing the pottery (paragraph 17) are generally very simple in construction.

Mr. Hallifax then describes (paragraphs 21 *et seq.*) the common domestic utensils and other articles of rough pottery such as huqqas, lotas, chirágs, &c., and remarks upon their shapes, sizes, uses and price. A brief mention is made in paragraph 22 of the Jhajjar pottery of Rohtak and the '*kagazi* pottery.' Then paragraphs 23 *et seq.* deal with the caste, customs and prospects of the potter. The 'Kumhárs' are apparently a real caste consisting of both Hindús and Musalmáns—the former principally in the south-eastern districts, the latter on the frontier—and Mr. Hallifax estimates that only about one-third or one-fourth of the whole caste actually work as potters, and that of those who do, all or nearly all are obliged to supplement that profession with some other work during the four months of the rainy season. The potters are divided into two classes,—the town potter, who is paid by the work he turns out, and the village potter, who receives his *haq sep* calculated in various ways and by various standards. The prospects of the trade do not appear to be flourishing, as a " demand exists only for objects of utility, and fineness of work does not pay ; " while in towns the native pottery is being ousted to some extent by imported china ware. There are some interesting remarks, in paragraph 32 about wheel worship and the worship of 'Máta Devi' and the way in which the potter is affected by these superstitions.

3. Under the heading of Art Pottery the ware of Mooltan and Peshâwar is discussed. There are said to be only five persons engaged in the latter work, and that of Mooltan is deteriorating. The number of workmen is small, and they are abandoning native patterns and the fine old blue color for bad copies of European designs and less effective browns and greens. Ordinary native ware is seldom glazed, and it seems probable that what little glazing is done will soon die out, as the profits are very low and the better classes who can afford to pay higher prices prefer to buy imported china ware.

4. The manufacture of earthenware toys (khilauna) is treated under a separate heading. Their sale is restricted to the occasions of certain Hindu festivals, and they are made by ordinary potters to meet the demands of these fairs. They are moulded either in burnt clay moulds or on a light wheel, and are of most fantastic shapes and colouring. It is worthy of notice that the import of cheap European wooden toys, chiefly German, is increasing, and may bring about a restriction of the native industry.

5. The manufacture of glass is almost confined to the making of glass bangles (chúrís), which are sold very cheap and are in great requisition everywhere. Paragraph 74 gives an account of some of the customs and superstitions regarding the wearing of these ornaments. Other glass articles are made very sparingly and consist of looking glasses, lamp-chimneys, bottles, glasses, scent phials, etc. It is improbable that the manufacture of glass by native methods will ever be largely extended. In the large towns the competition of cheap imported glass is strongly felt, and in smaller places the necessarily small scale of production renders the cost of making everything except *chúrís* almost prohibitive.

I have, &c.,

A. J. GRANT,

Junior Secretary to the Financial Commissioner,

Punjab.

Punjab Government Press, Lahore—13-7-92—550.

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MONOGRAPH

ON THE

POTTERY AND GLASS INDUSTRIES

OF THE

PUNJAB.

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1. Subject.—The industries selected as the subject of the Monograph for 1891 are those connected with pottery and glass. They are considered under three heads, *viz.*: I, Rude Pottery; II, Glazed Pottery, Art Work and Toys; III, Glass.

The glass manufacture is practically confined to the making of "kánch chúrís," or bangles, and is limited in extent. The manufacture of toys is not a regular industry, but is carried on spasmodically to meet the irregular demands which arise chiefly during Hindu "melás." The forms of many common and unglazed vessels, such as "surábís" and "kúzás," are certainly artistic, but work which can be classified under the head of Art Pottery, as combining artistic design and colour with artistic form, exists in Mooltan and Pesháwar alone, and gives employment to a very small number of workmen. Delhi "porcelain" is also noticed under this head. The glazing of earthenware for domestic use is not often practised. Hence the most important branch of the industries under report is the manufacture of rude and unglazed vessels, being, as it is, essential to the domestic comfort of the people and of considerable importance to agriculture in supplying the customary means of irrigation.

I.—Rude Pottery.

2. Clay used.—The Punjab potter uses the simplest means and instruments in his trade. He prefers to avail himself of the materials that lie nearest to his hand without going further afield in search of what may answer his purpose better. Thus in the matter of clay, the potter uses the variety that is found in his immediate neighbourhood. The District reports enable me to give no exact description of the character and quality of the clays of the Province, except in reference to Hazára, for which District Mr. Middlemiss, of the Geological Survey, has kindly furnished the following note:—

3. Note on Hazara clays.—"The clays of the Hazára District may be roughly divided up as follows:—

Age.		
Recent.	1.	Inferior porcelain clay and semi-decomposed felspar found in the vicinity of the granite masses in Upper Hazára.
	2.	Light reddish-brown clay, associated with loams and sands, which go to form the alluvium of the present larger river beds.
Tertiary.	3.	Bright red clays, associated with the soft sandstone of the "Murree beds" found along the southern border of the hills.
	4.	A few grey soft shales or clays.
Jyranic.	5.	The jet black "Spiti shale" of this age is found at the surface as a black clay, or may be reconverted into a black clay by mixing with water.

On the whole, the clays of Hazára are poor, unless the reported porcelain clays of Upper Hazára turn out to be better than they seem (see *Gazetteer*, Hazára, paragraph 12). Under (2) perhaps come those most useful for rough pottery, though (5) doubtless would be better if there were enough of it; (2), (3) and (4) are, however, all more or less loamy in character, owing to sandy admixture, which unfits them for finer work." From the district report it appears that the red clays are practically recognised as the most useful.

4. Clay generally found.—As in Hazára, so throughout the Province, the clays fund in each district are of two or three kinds, coloured in various shades of grey and red. Clay described as white or yellow is not common, and

is found only in the Deraját and Pesháwar Divisions, and in the districts of Jhang, Karnál and Sháhpur (near the Salt Range.) Pesháwar is the only district where the pottery called by Mr. Baden-Powell "the pale yellow ware of the Deraját" obtains more extensively than the red ware, for in the other districts of the Deraját and Pesháwar Divisions red or so-called black clay is used more commonly than yellow. In Karnál, the yellow clay is in general use except for cooking-pots; and Mr. Baden-Powell also notices Mooltan as a district where white pottery is made. The common name for clay is "chikni mitti," and the different varieties are roughly distinguished by their colours as kálí, lál or pílí. In the Deraját, the light red clay is called "kappar," and a clay called "gusúr" is found, which is said to be "of a brown and greenish colour."

5. Characteristics of clay most commonly used.—The same clay is used for rough pottery and for art work: the varieties chiefly used are the light red, and the so-called "kálí mitti," which is not black but dark grey in colour, really black clay being very rare. The light red clay absorbs little water, is light, silicious, easy to manipulate, and capable of being made very smooth, and burns to a light red colour, while the "kálí mitti" is ductile and tenacious, and burns to a dark brick red. The light clay is preferred for the manufacture of small vessels and of those made in moulds or simply turned on the wheel without further manipulation after they are "thrown" in their "green" state, *i. e.*, before they are burnt. It is easier to work, and burns a better colour than the black clay, but the latter is preferred if the vessel to be made is large and has to be worked up after leaving the wheel, and also for vessels, such as cooking-pots, which are subjected to heat and hard wear.

6. Clay, where obtained.—The red clay is obtained one or two feet below the surface of the ground. In sandy tracts it is occasionally dug out to the depth of four feet, and in such tracts the pits dug for the supply of brick-clay are resorted to by the potter. The black clay is as easy to obtain as the red, for it is found wherever there is a village pond or a marsh, and also in depressions in the level of the country in which water stands for any length of time. In Kángra the clay deposits, which are known as "mattiáni," are situated in alluvial hill-sides, and the banks of the Indus and other rivers and streams also yield clay—with an exception in the case of the Jumna. Spots which are known to yield clay exist in almost every village, and the potter has no difficulty in getting what he wants. He digs it up himself and uses his donkeys to transport it to his house. City potters may, like their village brethren, get their own clay, or they may buy it for about 2 annas per donkey-load (about one maund). Even in places like Ferozepore, where it is said to be somewhat difficult to obtain, good clay is got within three or four miles of the city, and can be bought for four to eight annas per cart-load, according to quality. The only exception mentioned in the reports to the rule that potters do not go outside their own districts for clay, are the small import into Kohát of red clay from the Afridí Pass country for use in making the bottoms of cooking-pots, and the import into the same district of clay from Kalábagh in Bannu.

7. Cost of clay.—Clay generally costs nothing, as it is obtained from uncultivated lands which are "shámilát deh," from which the potter, as a village "kamín," is allowed to take it without payment. And even if a man goes for clay to a village in which he is not a "kamín" no charge is ordinarily made. The only districts in which payment is the rule are Karnál and Kángra, in which the "kumhár" is not always regarded as a "sepi." For clay taken from common land, the potter in Kángra has to make a special contribution to the village fund, and in Karnál he has to supply, in rotation with his fellow potters, all the vessels required by Government officials on tour. Of course if the "kumhár" prefers to go for clay to land in the possession of a "zamíndár," he has to pay for it, and the clay so obtained is sometimes so good as to make it worth his while. The price paid varies; most often all the vessels required by the owner of the land are supplied free of cost, sometimes a sum of Re. 1 or Rs. 2 in cash is paid per annum, and in Mooltan the charge is based on the area of the land dug up, Rs. 2 being paid annually for each marla.

8. Coloured earths, "Banni," &c.—Besides the clay of which the vessel is formed, coloured earths are the only other materials used in rude pottery work. These cannot be moulded, and they are used simply as colouring

matter. That most commonly used is red, but black and white earth is also procured in the Salt Range. The red earth is usually found in a few spots in each district, and is known as "banni," "panni" or "geru" (red ochre). This colouring matter costs the potter very little. It can be bought for 16 sérs per rupee; but usually one potter makes the journey to the spot where the earth is found, and brings back on his donkeys as much as he and his fellow potters in the neighbourhood require, and as it is very sparingly used a supply thus procured lasts a long time. The "banni" is dissolved in water, and the wash is applied with a cloth to the ware before baking. If "banni" is not available, the colour is got from "surkhí" or the powdered pieces of old crockery. In Amritsar oxide of lead is applied, and in Dera Ismail Khan an earth, called "sáwí mitti," is used, which is got from the Shiráni hills and costs Re 1 per maund.

9. Preparation of clay.—To prepare clay for use, it is first dried and then thoroughly pounded with a wooden pounder, called "munglí," and the powder is sifted through a sieve ("channa" or "jhanna"). The fine powder thus obtained is put aside, and the coarse clay left in the sieve is put into water and dissolved. The powder is then added to the liquid, and the whole is slightly dried and kneaded with the hands. These processes are performed more or less carefully according to the manner in which each individual works, but as a rule little care seems to be taken over them; and though two or three days may well be spent in pounding and sifting the clay, and three or four days more in kneading and "wedging" it, the whole process of pounding and kneading is often finished in six or seven hours, and the use of the sieve is sometimes dispensed with, the powdered clay being simply sifted through the fingers. The method followed in the jails is to mix water with the powdered clay, and then allow it to stand until the coarser pieces sink to the bottom, finally drawing off for use the fine clay that rises to the top and rejecting the sediment; but this plan has not been generally adopted by potters, though it is occasionally followed in preparing clay for fine ware.

10. Admixture of sand.—Any admixture which it is proposed to make with the clay is made during the process of kneading. Sand is everywhere added to stiff clays to render them more plastic and to diminish the risk of breakage in baking, but the proportion of sand to clay varies greatly. It is largest in Karnál, where two parts of sand are mixed with one of clay, but more commonly only one-third or one-fourth sand is added, though the mixture of as much as two-thirds the weight of clay is not rare. The admixture of course varies with the quality of the clay, and no sand at all would be required if the clay was itself light and sandy. Instead of sand a light clay is often mixed with a stiff clay to render the latter more fit to work.

11. Admixture of salt, saltpetre or powdered bulrushes.—Salt and saltpetre are also mixed with clay, but the object of using them is to increase the cooling qualities of vessels such as "gharás" and "suráhís" in which water is kept. But salt or saltpetre is so used in a few districts only, as in Sirsa, where the potters use salt only at the special request of their customers, and add only one part to one hundred parts of clay. In districts where this mixture is used, vessels made of it are considered superior to those made of simply clay, and fetch a higher price. Instead of salt, the Peshawar potters add one tola of "lúkh" or powdered bulrush to each sér of clay. This use of bulrushes is noted in Stuart's Punjab Plants, p. 246, where it is stated that the down of the ripe fruit is the part that is used.

12. Storage of prepared clay.—After having been well kneaded and prepared, the clay requires to be put aside for a day or two in a cool, shady place in order to lose some of its superfluous moisture. For this purpose it is made up into "pinnás" or balls of about 10 sérs each, and deposited inside the potter's house. Ordinarily, only just as much clay is prepared at one time as is sufficient for the work in hand; hence no arrangements for the storage of prepared clay are usual. But if a potter is in the habit of keeping a large stock of prepared clay, which he probably does only if he has to go far to get it, he deposits it in a wide hole made in the ground, called "ghambail" or "bhora," which has a very narrow mouth, closed by a pottery cover or a piece of cloth.

13. Potters' wheels.—The wheel or "chák" is used in "throwing" or turning most kinds of pottery ware, though large vessels are subjected to considerable manipulation after leaving the wheel. In the case of very large articles, the "chák" is not used at all, the moulding being done entirely by hand, and in the case of "surâhís," "jhajjârs" and "chillams" the wheel is used only to finish vessels prepared in moulds.

Two descriptions of wheel are in use, *viz.*, (1) a single wheel turned by hand and supported on a pivot placed upon the surface of the ground; and (2) a double wheel, which is fitted in a hole, 2 feet 6 inches or 3 feet deep, and is turned by the action of the feet. Figures of the two kinds of wheel are given in Plate I.

The simple wheel is called "rám chák," and is that which is almost universally used in the Divisions of Delhi and Jullundur, the double wheel being found only in Delhi and the large towns, where it is used for the moulding of big vessels. The double wheel is almost exclusively used in the Peshâwar Division and Derajât. In the rest of the Punjab both wheels are found, but wherever Kashmíri potters exist, they invariably use the "rám chák."

14. "Ram chak."—The "rám chák" is made either of wood, stone, or clay. The latter variety is the most common, the clay being mixed with some substance (such as the hair of camels or goats, or else cotton, flax or donkey's dung) to bind and strengthen it and diminish the risk of breakage. The diameter is from 2½ to 3 feet and the thickness from 3 to 4 inches, and a round piece of stone (chákvati) is let into the under side to hold the axis of iron (kil or killi) or of wood (chuthi), which revolves on a pivot called "thána" or "chopat," supported on a framework of wood: otherwise the "kil" is fixed in the "thána" as in the diagram. Occasionally the wheel is strengthened by cross pieces of wood, and is enclosed in a circular wooden frame, and a slab of baked clay (thikra) or stone is sometimes found let in at the centre of the upper part to serve as a surface for working, and to prevent the clay of the wheel from damage by moisture. But the Punjabi potter cares little for these refinements, and generally works with a simple wheel which has neither frame nor slab.

Motion is imparted to the "rám chák" by means of a stick which is usually called "danda," but to which the names "soti," "chákdanda," "chalakára," "cháklai" and "chaket" are also applied in various districts. This stick fits into a notch or hole made near the circumference of the upper surface of the wheel. The hole inclines at an angle of 45° to the surface, with its mouth towards the centre, and thus the stick, which is about 3 feet long, when fixed in the hole, also inclines over the centre of the wheel. The workman imparts an initial impetus with his hands and feet, and then grasps the stick with both hands, the right being over the middle of the "chák," and the left holding the end of the stick. An action of the hand and wrist causes the wheel to revolve, and it is so well balanced that the impetus given is sufficient to keep it spinning steadily for from 5 to 10 minutes, during which time the "danda" is laid aside, and both hands are used in "throwing" the clay which has been placed ready on the wheel. The weight of the "rám chák" is from 1 to 1½ maunds, and it is raised 6 inches off the ground on its pivot. Its advantages are, that it can be moved as occasion requires and placed wherever the potter finds it most convenient to work, and it costs very little. A wooden "chák," which lasts for 20 years, can be got from a tarkhán for Re. 1, while the clay wheel will last 5 or 6 years, and actually costs the potter nothing. It takes three days to make, and its value may thus be put at 12 annas or under.

This wheel, however, is given to "wobble" when it begins to stop spinning, and the potter has to leave off his work to set it going again, thus losing the time which is economised by the use of the double wheel, which is turned by the feet and always spins steadily.

15. The double wheel.—The double wheel is called "chák lakri," and is fixed in a pit about 2 feet 6 inches, or 3 feet deep and 3 feet in diameter. It has an axis (tír or salai) which passes through a beam (phalri, parari) placed over the mouth of the pit, and turns on an iron point (sumba, tumli or chuthi) upon a block of stone (batta) or a piece of camel's bone or wood (chopat) fixed in the bottom of the pit. Attached to the axis there are two discs of wood, one

at the upper end and one near the bottom. The upper disc is that on which the clay is worked; it is 9 or 10 inches in diamater and 2 inches thick, and is made with its centre slightly raised; it is commonly called "topi" or "siri." The lower disc is 2 feet in diameter and 3 inches thick, and is bound round the outer edge with an iron band. It is known as "chák" or "thána," and the workman, sitting on the edge on the pit, pushes it with his foot and so sets the upper table spinning. The double wheel is generally known as "chák," but in the Deraját it is called "charkh" and "chakkar."

16. Other instruments.—In addition to a wheel, the following instruments are used:—

(1.) **"Taga."**—A string, usually called "tága" or "dora," and also known as "chhín," "chíwan" or "kalwatri," used to separate the moulded portion of the clay from the rest of the lump on the wheel. It is drawn gently through the clay at the place where it is to be cut while the wheel is turning at full speed.

(2.)—(3). **"Thatwa" and "Konera."**—These instruments are represented in Plate I, Figs. 3 and 4. A large vessel when it leaves the wheel is only roughly formed, and is much thicker and smaller than it is intended to become. This rough shape, while still moist and before baking, is beaten out to the required size and thinness by the use of the "thatwa" and "konera." The former is a flat mallet of wood, about a foot long, and has one of its sides slightly concave, and the latter is a convex piece of clay or stone fitted with a handle. The "konera" is held with the left hand against the inside of a vessel to be operated on, and the concave side of the "thatwa" is used to tap the vessel over the spot where the "konera" is held. In this manner the clay is beaten out as much as required. The commonest names for these instruments are "thatwa," "thatwi," and "konera" or "koneri." But the former is also called "thapa," "thapi," "thitman" and "thola," and the latter "paindi" or "pindi," "kariru," "chappi" or "thipa." In the Deraját the common names are used, but the "thatwa" is also known as "phala," "phatki" or "chappra," and the "konera" as "dhelu" or "watta."

(4). **"Arthra."**—While the "thatwa" and "konera" are being used the vessel is held up in a concave rest called "arthra," "arthri" or "khopra." This is made of clay mixed with something to bind it, or else is simply the semicircular half of an old "ghara."

(5). **Scrapers.**—Iron blades or scrapers, called "chilni," are used to smooth the ware while it is on the wheel. These scrapers are occasionally shaped like small cups or "katora," and are then called "khoriya." Scrapers of wood are also used, as well as pieces of wet cloth (parola or lír) and smooth stones (gítí).

(6). **Dies.**—"Thappás" and "sánchás" are pieces of wood on which patterns are carved, and they are used for impressing these patterns on the ware.

(7). **Moulds.**—Moulds of baked clay, used in making "surahís," &c., are also called "sánchás." Before being used they are sprinkled with sand to prevent the clay sticking.

(8). **Brush.**—"Chatarni," "chatrín" or "qalam" is a brush used in applying "banni" or other colouring matter, and in painting lines and designs on pots.

(9). **"Patris."**—"Patri," "pinawat" or "teriwat" is a slab on which clay is kneaded immediately before use.

(10). **"Trena."**—"Trena" or "bhánda" is a bowl containing water or sand kept by the side of the potter as he works. The water is used to wet the hands with, and the sand to dry the hands or to add to the clay.

(11). **"Pasna."**—The Amballa potters use a sort of hoop, called "pasna," with which they cut heaps of kneaded clay into thin slices in order to detect and remove stones or any other hard substances. This corresponds to what is known as "wedging."

17. Method of manufacture.—In proceeding to the manufacture of vessels, the potter thoroughly kneads some of his prepared clay on a "patri" and places it on "chák," after wetting the latter. The wheel is then

set in motion, and both hands are used to shape the clay by the pressure of the fingers and thumbs, the hands being continually moistened in the "trena." Small and simple vessels, such as "piálás" and "díwás," are finished on the wheel, and a large number is made from one lump of clay without stopping the revolution; each vessel is cut off when ready with the "tága." The larger vessels are worked up with the "thatwa" and "konera," sand being sprinkled inside and out to prevent sticking. A vessel is usually beaten out a little, and water is then applied to it, and it is allowed to dry for a few hours. After this, the beating out and drying process is repeated as often as necessary, sometimes as often as five or six times. When the final shape has been arrived at, all cracks are filled up with a mixture of clay and sand, and the vessel is smoothed on the wheel with the "chilni" or "gítís" and is set aside to dry a little before baking.

A coating of clay is often put over the bottom of pots to strengthen them, and a wash of "kallar," or a sprinkling of sand, salt or saltpetre, is sometimes applied to ware just before baking.

18. Colouring and ornamentation.—When the pottery is ready for the kiln, it is, as a rule, coloured with "banni," as described above. Circles are occasionally scratched on while the vessel is revolving on the wheel, and designs are stamped on with "thappás," or roughly scratched on with nails, and grains of sand are sometimes beaten in to form patterns. On the red "banni" the potter's women make rude paintings in black lines,—called "chittan,"—and white flowers or ornaments can be produced by the use of chalk. The black lines often have a peculiar meaning, for the "ghara" which a Hindu has to present to his "gúru" must be ornamented with them; hence in some places, as in Karnál, "gharás" so marked are used by Hindús only.

Very few vessels are coloured black, this colour being used, as a rule, for "surāhís," "huqqás" and "chillams" only. Black is obtained after the vessels have been baked, by putting camel's or goat's dung or chips of deodár wood into the kiln, and then completely stopping up every opening, so that the smoke penetrates the ware and gives it the colour.

19. Kilns.—Regular kilns of the kind described by Mr. Baden-Powell are only occasionally met with in places where fine pottery is made. The most common form of kiln (áwá, bhatti) is a simple hole dug in the ground near the potter's house. The material used for firing is "oplás" or "kundás" (cow-dung cakes) with straw and sweepings—wood is too expensive. The "oplás" are laid a foot or so deep on the ground and arranged so as to stand up on their edges. Vessels are put over them in layers, each layer being separated from that above it by "oplás," and small vessels are enclosed in pans which are especially kept for this purpose. The whole kiln is covered over with sweepings and straw; holes are made in this covering and fire is applied from below. The heat is regulated by opening or closing the holes in the covering, and if the flame is pale the heat is considered too slow, and too strong if the flame is greenish. The character of the kiln is such that its capacity as well as the time taken to fire it are not constant. The larger kilns hold 500 vessels and require two or three days firing, while others take 100 vessels only, which can be baked in one night. The number of times the kiln is used also varies with its capacity; thus in Ferozepore it is used twice a month, but in Bannu only four times in the year. Owing to want of care in the preparation of the clay and ware, and also to the primitive nature of the kiln, the loss in baking through, breaking and burning is very great, and is said to amount to 25 per cent. in summer, and as much as 40 per cent. in winter.

20. Articles made.—The articles chiefly made are those in common domestic use or those required for agricultural purposes.

20. (1) Water-pots, "gharas," &c.—Among the domestic vessels, those intended for the keeping and cooling of water are the most important. Of these, the largest in common use is the "mat" or "matti," the price of which ranges from 1 to 4 annas, according to size. A larger vessel than the "mat" is the "mattan," which runs up to 12 annas in price, but this is meant not so much for domestic use as for the storage of grain and the supply of water in mosques. In Kángra the "mat" is known as "matloha." This vessel is

followed in size by the "cháti" or "matka," which is occasionally called "matura"; the "cháti" is usually sold for about one anna. The "cháturi" is a vessel which resembles the "cháti," but is smaller; it is sometimes larger and sometimes smaller than a "ghara," which latter costs from 3 pies to one anna, and from its convenient size is the water vessel which is in most general use. The names "mat" and "cháti" are not used in the Delhi Division, where the largest vessels, costing three or four annas, are called "jhár," and the next in size, which are about twice as large as the ordinary "ghara," are known as "gol."

The vessels named above differ not only in size, but also in shape: they are shown in Plate II, Figs. 1, 2, 3. The "ghara" has a round body with a somewhat narrow mouth; the "cháti" and "matka" are made with a body like that of a "ghara," but with a lower neck and more open mouth; and the "mat," "mattan," "jhár" and "gol" all have an elongated body and broad mouth.

A cover, called "chapni" or "chúni," is sold with "gharás," "chátís," &c., and is not separately charged for. "Gharás," which are usually made to hold from 20 to 25 sérs of water, are used by all classes,—Muhammadans, Hindús and Europeans,—and on account of their porosity are particularly suited, as water vessels, to the Punjab. Vessels larger than the "ghara" are used for water chiefly by Muhammadans, as Hindús prefer copper to earthenware for keeping large quantities of water. But Hindús as well as Muhammadans more commonly use them for keeping grain, "gur," "shera," &c., while "chátís" and "matkás" are also used for keeping milk, and in "belnás" to collect "gur" as it is pressed out. The larger vessels are considered to be the more adapted to cooling water, but, as noted above, salt is sometimes used in making the smaller ones in order to improve their cooling qualities, and vessels made of clay mixed with salt realise slightly better prices than those made of simple clay.

"Gharás" from which hot water is poured while bathing are made with a small spout, and are used by Hindús and Muhammadans. The spout is added to an ordinary "ghara" before baking, and adds nothing to its price.

The ordinary life of a "ghara" is about 6 months, but poor people sometimes preserve them with great care; and the case of a man is recorded who had a vessel that had been in use five years, and of the cooling qualities of which he was still proud, though it was black and dirty. A poor family uses only a "ghara" or two during a year, while a family in easy circumstances, if Hindu, is said to use 20 to 25 in a year, but only 7 or 8, if Muhammadan. Every family, however, uses this and other water vessels, not only for water, but aslo for keeping grain, &c., and the manufacture of such vessels is the most important part of the ordinary potter's work. The Jullundur report gives estimates of the value of the various vessels turned out in that district in one year, from which it appears that the total outturn is of the value of Rs. 2,31,000, of which "gharás" were made to the value of Rs. 1,13,000, "chátís" to the value of over Rs. 5,700, and "mats" over Rs. 2,400; these water vessels thus having altogether a value of more than half the total outturn of pottery in the district. Had figures been given for other districts it would probably have been seen that the case was the same throughout the Province.

The number of vessels that a man can make in a day is difficult to state accurately, because the sizes of each kind of vessel vary so greatly. It may be roughly said that 20 to 25 small "gharás" or 8 to 12 large "gharás" are a fair average, while from 7 to 10 "chátís" or 4 or 5 of the largest vessels can be made in one day, though a "mat," if very large, may take several days. All these vessels are made roughly on the wheel, and are then hammered out with the "thatwa" and "konera"; and the estimates of daily outturn refer to the number that can be made in one day from prepared clay. As a rule, potters work together, or are helped by their families; so that one man is continuously at the wheel, while others look after the clay and the kiln. If, however, the same man prepared the clay and then made the vessels and baked them, it would take him three days or more to finish the number that he could mould in one day.

20. (2.) "Surahi."—An ordinary adjunct to the "ghara" or other water-vessel is the goglet, called "surahí" or "jhajjhar," and also known as

"kúza" or "lota," and in Kángra as "oli." This vessel, like the "ghara," is made of various sizes; its commonest form has a round body with a long narrow neck (as shown in Plate II, Fig. 4), and it is used as the decanter in which to draw water for immediate use. The body is sometimes made on the wheel and with the "thatwa" and "konera"—the neck, and occasionally the bottom also, being made separately and joined on afterwards, with a ring of clay put over the join between the neck and body to make it more secure. But, as a rule, "surāhís" are moulded. The body is made in two moulds (having "naqsh" or designs stamped on them, which appear on the "surāhí," in relief). The moulded halves join horizontally in the middle, and the neck is made separately on the wheel, and the different parts are joined together on the wheel, which is revolved while they are adjusted. Inequalities in the joints are smoothed off with the wet cloth or the stones and scrapers kept for the purpose.

This vessel is used by Hindús and Muhammadans, and occasionally by Europeans. It has a great variety of forms besides that mentioned above. Thus the "battak" has flattened sides, and is fitted with ears to allow of its being slung up by a cord on the back of a traveller. The "jhárí" is another form, and is a large vessel, either round or flattened, but with a narrow, low neck into which two fingers only can be inserted, and is used for carrying water on journeys, or to places where work has to be done but water is not procurable. A variety of the "jhárí" is made in Shahpur of a size which can be conveniently carried in donkey bags. One kind of "surāhí," called "phúsa," resembles an English tea-pot, and another kind has two chambers separated by a space between them; the inner chamber, in which water is kept, is thus surrounded by a perforated chamber, which is used either for ornament or because it helps in cooling the water.

As "surāhís" are generally moulded, a large number can be turned out daily, and the average outturn is 30 or more ordinary "surāhís," 15 or 16 "battaks" or 5 or 6 "jhárís." The price of all varieties range from 3 pies to 1 or 2 annas, and even the more elaborate forms do not exceed the latter price.

20. (3.) "**Gilas.**"—The "gilás" is generally used with the "surāhí," as the "surāhí" with the "ghara." The "gilás," more properly called "ábkhora" (or "matkána" in Delhi), is a small deep pot with a rim. It is moulded entirely on the wheel, and as it is perfectly simple large numbers are made in one day, so that the price is 1 or 1½ pies each—sometimes 3 pies each. Water is poured from the "surāhí" into the "ábkhora" and drunk from it; hence its use is confined entirely to Muhammadans, as Hindús are unable to use it owing to their belief that earthenware is defiled when anything has been eaten off it, or when it has been touched by the lips in drinking from it.

20. (4) "**Astawa**" or "**Kuza.**"—Another vessel peculiar to Muhammadans is the "astáwá," "kúza," "lota," "badhna" or "wadhani," which is used for ceremonial ablutions before prayers—some are usually kept in every mosque for the use of the worshippers. It is commonly made like a long necked "surāhí" with a spout and handle (Plate II, Fig. 5); the spout is characteristic, but the handle is sometimes dispensed with. The body and neck are made like those of a "surāhí," and the spout and handle are made afterwards and joined on. As the vessel is moulded, a large number can be made in a day, and its price is generally from 3 to 6 pies.

20. (5). **Cooking-pots.**—Cooking vessels of earthen-ware are not used by Hindús of good caste, as earthen-ware is defiled if anything is cooked in it, but Muhammadans and low-caste Hindús use a cooking-pot which resembles a "cháti" (Plate II, Fig. 6). This pot is known as "hándí," and it also has the name "kúná," "kúní" or "katwi." It is made in the same way as a "ghara," and 10 large or 20 small ones can be made in one day, the price varying from 3 to 9 pies for each vessel. The large ones are also used to keep water in, and all "hándís" are used both by Hindús and Muhammadans for the storage of dry goods, such as grain, flour and spices. The "chapni" or "chúni" is used as a cover for this pot, as well as for the "ghara," and is called "mali" in Kángra.

20. (6.) Vessels for cooking roti.—The "tawi" or "thobi" is another cooking vessel, and is used for cooking "roti." It is a flat plate on which the "roti" is placed and baked, and costs from 3 to 6 pies, about 15 being made in a day. In Kohát a "tandúr" is also used for cooking "roti," and is described as a large jar, which is heated, and round the sides of which the "rotís" are placed.

20. (7.) Plates and Dishes and Cups.—The vessels used as plates and dishes are the "tabáq," "tabáqrí," "patrolí" and "rikábí"—the forms of which are shown in Plate II, Figs. 7 and 8. These are all round flat dishes with raised sides, and differ only in size. The largest is the "tabáq," sometimes called "domri," or "cowri," and it is used for serving up rice or other food. The "tabáqrí," "patrolí" and "rikábí" are all small dishes, and are used as plates. The "tabáq" is placed in the centre of the circle formed by the family or guests, and each person dips his fingers into it, and transfers a portion of its contents to his own "rikábí" for disposal. Hindús use plates only of metal or leaves (patal); hence these earthen-ware dishes are peculiarly Muhammadan. Their price varies from 1 pie for the "rikábí" to 6 pies for the "tabáq."

A vessel called "sanak," and corresponding to the "rikábí," but made more like a saucer, is used by poor Hindús in place of brass "thálís," and occasionally by rich and high-caste Hindús for acid food, which would damage metal vessels, or on the occasion of feasts, when many plates are required. The "sanak" costs $1\frac{1}{2}$ pie, and is usually thrown away after having been used once.

Muhammadans use cups of various sizes—"piála" "piálí" ("batlí" in Bannu)—for drinking soup, milk and other liquids. These are made on the wheel in the form of a deep saucer or cup (as in Plate II, Fig. 9), the bottom being flattened after the vessel is removed from the wheel. Several hundreds can be made by one man in a day, and the larger ones are sold for 1 to 3 pies each, while the smaller ones cost only 2 annas per cent. Hindús only use them as they use the "sanak."

Covered dishes, called "sarposh" or "dhakwán," are used by Muhammadans for serving up "roti." They are like a "tabáq" with a cover, which is often ornamented with stamped patterns, and cost from 1 to 3 annas each.

20. (8.) Vessels used as receptacles for grain and other dry goods.—The vessels in which water is kept, and more especially those of larger size, are used by both Hindús and Muhammadans as receptacles for dry goods. But vessels made especially for this purpose, and also used by all classes, are the "jhánwála," which is like a large "cháti"; the "kulfa," with its diminutive the "kulfí," a semi-circular pot provided with a cover; the "taula," which is made something like a well "tind"; and the "kulhia," which is a very small "taula." Five hundred "kulhiás" can be made in a day, and they cost about 2 annas per cent. only, but only 10 to 20 of the other kinds of vessels can be turned out daily, and their prices are :—"taula" 6 pies each, "jhánwála" 1 anna each, "kulfa" and "kulfí" from 6 pies to 2 annas each.

20. (9.) "Martaban."—The "martabán" (Plate II, Fig. 10) is a small deep jar with an elongated body, which is used by Hindús and Muhammadans to keep pickles and acid articles. In Kángra a vessel used for similar purposes is called "jasla," but is shallow, and has a broad mouth, and does not resemble the "martabán." About 10 or 12 of these can be made in a day, and they sell for 3 to 6 pies each.

20. (10.) Vessels for milk and oil, &c.—The "dahauni" or "doháwa" (Plate II, Fig. 11) is a vessel used as a milking-pail, and also for keeping and warming milk, and Hindús use it as well as Muhammadans. Ordinary well "tinds" are also used for milking, but the vessels used to keep "ghi," butter, milk and oil in is more usually the "dola" or "dolí," which is also known as "maghi," or by the general name "kúza" (Plate III, Fig. 12). It holds from 2 to 5 sérs of milk, and is made with a narrow mouth, costing from 3 to 6 pies each. The "kunda" and "jamáwána" are more especially intended to keep curds in, and the camel-men in Shahpur keep their milk in a vessel known as "daura."

20. (11.) **Vessels used by milk-sellers and "halwais."**—The "khumrú" is a small vessel made for Hindu milk-sellers, and is used by them to send out their milk to customers. The "shakora" is another vessel used for the same purpose, and also by "halwáis" for the sale of sweetmeats. It is seldom used by Muhammadans, but Hindús use it to keep milk and curds in, and at feasts it is used as a pot for curds or pickles. This and the "khumrú" are small pots of simple form, and as they are easily made on the wheel, their price is only from 1 to 4 annas per cent., according to size.

The "thuthí," which is a small plain saucer, and costs 6 pies per cent., and the "kular," another small vessel selling for 1½ pies per cent., are also used by milkmen and "halwáis" for the sale of their goods. All these vessels are, as a rule, thrown away by Hindús after use. The "kular" and "thuthí" are shown in Plate III, Figs. 13 and 14.

20. (12.) **Vessels used for kneading flour.**—The "tabáq" mentioned above is used to knead flour in, and vessels made especially for this purpose resemble it. They are called "sáhnak," "kúnál," "kunda" or "patrí," and are larger than the "tabáq," being usually about 2 feet in diameter, and they cost up to 4 annas each, according to size. They are also used for washing clothes and other purposes.

20. (13.) **"Tinds" and other vessels used by Zamindars.**—Of vessels used in agriculture the "tind" or "lota" (Plate III, Fig. 15) is the most important. It is a small pot tied on to the "máhl" or rope of a Persian-wheel, by which water for irrigation is raised from the well. From 50 to 100 can be turned out on the wheel in a day, and the price is more commonly 8 annas per cent.; but in some districts it is as low as 4 annas per cent., and in Karnál as high as Re. 1 per cent. If they are bought retail they cost from 1 to 3 pies each.

"Nánds" or "Kúnds" (Plate III, Fig. 16) are large vessels used as feeding troughs for cattle, and also as receptacles for water by masons, and for dyes by dyers, and for other purposes. Being too large to work upon the wheel they are made by hand, and only 3 or 4 can be turned out in a day. "Nánds" usually cost 2 or 3 annas each.

The "dokhla" or "chuttu" is a vessel used in clearing grain from dust; it is made with a wide mouth, and costs 1 anna 6 pies or 2 annas each.

In the Deraját a square bin for corn and flour, called "grand," is made, which is especially large, and costs 8 annas apiece.

20. (14.) **Dyers' "mats," &c.**—Among the articles made by potters are vessels for use various trades. Thus large "mats" are made for dyers, which are 4 feet high and 3 feet broad in the middle, and are intended to hold indigo. They are made especially well in Hoshiárpur, whence they are exported to the neighbouring districts. Similar "mats" are made for sugar manufacturers, and large "kunáls" are made for tanners to be used in soaking leather; the "kunáls" made by "Purbia" potters at Karnál have some local fame. All these large vessels are made by hand, and each takes 2 or 3 days to make. The price depends on the size, but averages about 8 annas.

20. (15.) **"Huqqas" and "Chillams."**—Potters also make "huqqás" or tobacco pipes and their parts in various forms. The "huqqa" commonly smoked by peasant women (shown in Plate III, Fig. 17) has the "chillam" or tobacco-holder joined on to the body of the "huqqa," which holds water: this variety costs 1 or 2 annas, and 3 or 4 can be made in a day. But the commoner "hubble-bubbles" have the "chillam" or "haweza" separate from the water-holder, which is itself called "huqqa." The latter are made in various shapes, and are sometimes plain, sometimes ornamented with stamped designs or grooves, but their price does not exceed 6 pies as a rule. The "chillams" also have various shapes, some of which, such as those made at Jhajjar in Rohtak, are highly ornamental. The commoner forms are broadly divided into "chillams" used in towns (Plate III, Fig. 18) and those used in villages (Plate III, Fig. 19), the former being better made, and having a wider mouth than the latter.

"Chillams" with covers are also made for chárás smoking, and the prices of all varieties range from 1 to 6 pies apiece.

20. (16.) **Miscellaneous articles.**—Among other articles made are the following :—

"Chirág" or "díwa" (Plate III, Fig. 20), the ordinary oil lamp made to hold about 2 chittáks of oil, which is turned on the wheel, the notch for the wick being made by pressing down the edge with the fingers. They sell at 1 or 2 annas per cent., as a very large number can be made in a day.

A specially small "chirág," called "dewla," used only by Hindús for illuminations during the "Diwálí," and costing 6 pies per cent.

Clay stands for "chirágs," sometimes used in place of the more common stands of wood.

The "mátra," or "chakki" which is a large shallow vessel in which grindstones are placed, and which serves to collect the flour as it is ground out. It is made by hand, and costs from 1 to 3 annas.

Mortars, called "daura," "dauri," okhlí," or "kunda," which are made on the wheel with few pieces of stone let into the bottom to strengthen it. These are used with wooden pestles for pounding medicines, condiments, &c.

"Dawait" or ink-pots (Plate III, Fig. 21), of which from 100 to 300 can be made in a day, and which cost 4 or 5 annas per cent.

"Kulábás" (drainage pipes), "parnálás" (roof drains), "khapra" (tiles), which are all moulded by hand.

"Gamlás," or flower-pots, selling at Re. 1-8-0 to Rs. 4 per cent.

"Pinjrás," or pierced tiles for windows or walls, and a few other miscellaneous articles, such as the "kángrí," a vessel used chiefly in the hills, and said to be of Kashmírí origin, which is filled with live charcoal and carried about under the clothes for warmth; "anárs," made for the fire-works, so called; "agardán," for holding burning incense; "chilomchís" or basins; "sil" or "sang-pair" (bathing slabs), &c.

21. **Noteable ware.**—Every district has one or two places in which the best pottery is said to be made—the especial estimation in which the local ware is held being most often the result of the excellent clay found in the neighbourhood. But the ware made at Jhajjar in Rohtak and the "kágazí" pottery made in various towns have more than a merely local celebrity.

21. 1.) **Jhajjar Pottery.**—The Jhajjar ware is not glazed or coloured (except that a sparkling white is sometimes imparted to it by the application of a mixture of kikar gum and mica (abrakh) obtained in the neighbourhood). The articles made are chiefly "surahís" "huqqás," "chillams," &c., and they are coloured in the usual way with "banni," but the Jhajjar clay is good, and the workmen (who number 71, including women and children) are skilful, so that the ware is superior to that ordinarily made. The demand, however, is small, and it does not realise much higher prices than the ordinary pottery.

21. (2.) **"Kagazi" Pottery.**—"Kágazí" or paper pottery is remarkable for its thinness—a "surahí" holding 2 sérs of water weighs 8 chittáks only. It is made at Pánipat in Karnál, Jhajjar in Rohtak, Sheikh Bastí in Jullundur, Tánda in Hoshiárpur, and probably in a few other places. It is mentioned by Mr. Baden-Powell as being made in Kángra, but the district report does not notice it. The clay used is the ordinary clay, but this is prepared with much greater care than usual. It is steeped in water for 2 or 3 days, and carefully drained off, and then worked up with the hands to ensure its being absolutely free from pieces of "kankar" or other hard substances. The price is only a very little higher than that of ordinary pottery.

22. **The Potter's caste.**—The maker of pottery is always a "kumhár" by caste, whether Hindu or Muhammadan. Those who are engaged chiefly in making "surahís" and the like, or "kágazí" ware, are called "kuzagars," to

distinguish them from the "kumhár," who confines himself to making "gharás" and "tinds" and the rougher sort of ware. The report for Hissár is the only one that notices subdivisions of caste, and in that district the "kumhárs" call themselves "Tanesár Rájpúts," and are divided into the gôts of "Golu" and "Melar," and also subdivisions indicating the district of their origin, such as "Desí" and "Jodhpuría." In the Karnál report a similar subdivision is noted in the case of "Purbiás." But though he claims to be a "Rájpút," Hindús do not regard the "kumhár" as of a caste superior to those of his fellow "kamíns." According to Monier Williams his caste has a mixed origin, and results from the union of a "Brahman" with a "Kshatriya" woman, and owing to this fact, and because they occupy themselves in keeping donkeys and collecting dung and sweepings, "kumhárs" are regarded as of low caste. The Muhammadans, who must for the most part be converts from Hindúism, claim to be "Sheikhs"; among them there are a few Kashmírís, who are found chiefly in Siálkot, Gujrát and Amritsar. Muhammadan Chogattás and Bhattís occasionally are found as sellers of pottery-ware, but do not themselves work as potters.

In the Deraját and Pesháwar the industry is almost exclusively in the hands of Muhammadans, but Hindús, as well as Muhammadans, are found throughout the rest of the province, and in the south-east are the more numerous, while in Kángra the potters are nearly all Hindús.

23. Number of Potters.—The figures given in the reports are not sufficiently clear to afford an estimate of the number of potters in the province. In a few districts no estimate is made, and it is simply stated that potters are found in nearly every village, and when figures are given their basis varies in different districts. Thus the Amritsar report gives the number of "kumhárs" as 32,639, according to the last census, and remarks that all these do not necessarily work as potters, without making an estimate of the number of those that do. But the large proportion of those that do not so work is shown with clearness in the Hissár report. In reference to that district, Mr. Ibbetson has noted in his Census Report that the "kumhár" is very numerous, and is often a husbandman, and the district report estimates that of 21,623 Hindu and 6,077 Muhammadan "kumhárs," 1,621 only work as potters. As far as I can judge only $\frac{1}{8}$rd or $\frac{1}{4}$th of persons belonging to the "kumhár" caste are actually potters. The following figures from the reports show the amount of discrepancy:—Jhang is said to have 15,309 potters, while Lahore has only 4,765 and Delhi 2,000, and Montgomery, with more people and more villages than Jhang, is said to have 1,000 only. The total numbers for the province must be very considerable, as any but the smallest village has 2 or 3 potters.

24. Town-potters.—The number of town-potters, *i. e.*, potters who sell their wares for cash only and get no "haq sep," are returned as follows:—Gurgáon 150, Delhi 600, Hoshiárpur 414, Jullundur 1,008, Amritsar 60 families, Siálkot 340, Gujrát 4, and Dera Gházi Khan 240: these numbers including women and children. The figures probably do not give an exact estimate of the number of town-potters, but such men are found only in Sadar towns and cantonments, and exceed 500 in Delhi and Jullundur alone. In the latter case, the large number is not specially explained, and its correctness is doubtful. It probably includes men who are not altogether town-potters, but are to a certain extent "sepís" as well, and such men are found in all the large towns of the province, but cannot be strictly classed as town-potters. Therefore it appears that the number of the latter bears a very small proportion to that of village-potters.

25. The Potter as a "sepi."—The position of "kumhár" as "sepís" is recognised in every district except Kángra and Kohát and the Nowshera and Abbottabad tahsíls of Hazára, where the potter is not a "sepi," and vessels supplied by him are paid for in cash. In tracts when "charsás" or leather buckets are used instead of Persian-wheels for irrigation, the supply of well "tinds," one of the chief "*raisons* d'*être*" of the customary service, is not required, and in some tracts of this character, as in a part of Karnál, the "kumhár" is not a regular "kamín." In Hissár his position is somewhat anomalous, for the district report states that he is a sepí, but has no fixed

"haq," and cannot, like the "lohár" and others, claim a customary share in the harvest; but, in spite of this, he is apparently paid his share regularly.

26. The Potters' "sep."—It is impossible to give a general estimate of the average income which a "kumhár" derives from his "haq sep," for the basis of payment, as well as the service rendered, varies, and variations are found even in different parts of one district. The potter is indispensable as a "kamín" where Persian-wheels are used, and this method of irrigation has much influence on his prosperity. In Dera Gházi Khan, for example, the increase of well cultivation has greatly improved his position and prospects, and it appears that in Amritsar, in villages where there are no wells, the custom is growing of paying cash for household pots and "gharás," and this is being extended to villages where the canal has led to the closing of wells. But his duties as a "kamín" are also to supply the "saráí" and household with domestic vessels, and to give a new set of vessels on a marriage or death, and to supply agricultural vessels, such as those used in "gur" presses; occasionally he has also to carry his employer's grain as a portion of his service. Separate payment in grain or in cash is sometimes made for "tinds," and ordinarily for all the larger sorts of vessels.

27. Amount of "haq sep."—The amount of "haq sep" is determined either with reference to the number of wells supplied with "tinds" or per plough used by the "zamíndar" for whom service is done, or per house; but in some places the "kumhár" gets a fixed percentage on the total crops of his employer, or a fixed payment in kind per crop, without reference to the number of wells or ploughs used. In Dera Ismail Khan payment is made by giving the "kumhár" the produce of one "marla" of the wheat or turnip crop, and paying him Rs. 2 in addition if he supplies "tinds."

The following figures will show how much the payment varies:—

In Hissár the "haq sep" is 5 to 10 sérs grain annually per house, while in Ferozepore it is as much as 7½ maunds.

In Hoshiárpur only 1 "bharí" and 1 "páli" are given per plough (the "bharí" being as large a sheaf as a man can carry on his head, and containing about 12 or 14 sérs of grain, and the "páli" being a sheaf about half as large as the "bharí"), but cash or grain is paid for "tinds" or large vessels, and the "kumhár" is expected to supply only moderate sized household vessels. In Gurgáon the "haq" per plough rises to 1 maund per annum.

Fixed payments are made in Jullundur, where a "kumhár" who supplies "tinds" gets 5 maunds grain and a "bharí" per annum, or 1½ maund and a "bharí" if he does not supply "tinds," and Gujránwála where the payment is 14 "bharís" from various crops during the year.

The payments made by a proportion of the crop vary from about 1¼ per cent. in Siálkot and Shahpur to 2¼ per cent. in Dera Gházi Khan.

Besides the payment in grain, "gur" and cotton are also given in various quantities, and the "kumhár" has the right to collect cowdung for his kiln in the village, and he gets his clay and grazing for his donkeys free from the "shámilát" lands.

28. Presents at marriage, &c.—When the potter takes new vessels to a house on a marriage or other festival (on which occasions the proficiency he has acquired in kneading clay is sometimes made use of by employing him to knead the flour required), he gets some small payment in grain and a money present of from 4 annas to Rs. 3—usually a little more than the value of the goods supplied, but depending on the wealth and position of the family. A larger present is given on the marriage of a son than that which is given on a daughter's marriage.

Besides the "haq sep" a small sheaf of grain is occasionally given at the harvest when the reapers come to the end of a field, but only if the potter brings out a new "ghara" or visits the field in connection with the work.

29. Number of houses or wells supplied by one potter.—One family usually supplies 14 or 15 houses or works for the same number of ploughs. The number of vessels supplied per house is about 20 large and 25 small ones per annum; chiefly "gharás" and "surâhís" in the case of Hindús, and also including ábkhorás," "tabáqs," "hándís," &c., in the case of Muhammadans.

A well takes from 1,000 to 1,200 "tinds" per annum, and a family of potters can work for 3 or 4 wells and supply the sharers with household vessels.

30. Sale of vessels to non-zamindars.—After he has supplied those for whom he works as a "sepi," the "kumhár" can sell his spare pots to non-agriculturists, and he often contracts with them for Rs. 1 or 2 per annum. Moreover, in some large towns, as in Hoshiárpur, weekly pottery markets are held, where the country potter can afford to undersell the town workmen, thus giving a proof of latter's statement that the "haq sep" gives the village men an advantage.

31. Donkey and Wheel worship.—The customs of donkey and wheel worship may be noticed here as interesting, though the amount the potter gets from them is small, and they are said to be dying out. On the birth of a child, during small-pox epidemics, and in the month of Chait, women worship "Mátá Devi." The "kumhár," as the care-taker of the donkey, Mátá's favourite animal, which is worshipped, comes in for an offering of cooked rice, &c. "Banniáhs" are especially addicted to donkey worship, and it is frequently performed by them. The donkey is also worshipped at marriages; the bride-groom before the ceremonies at the bride's house has to touch it with his feet, and the "kumhár" who brings the animal is fed and gets some money.

Wheel worship is performed both before and after a marriage by the bride's female relatives, and is either "Krishna" worship (the wheel being an emblem of that god), or else it represent the worship of "Brahma Prajápati," the wheel being the symbol of reproduction.

32. Grave-digging.—Muhammadans pay "kumhárs" a few annas on the occasion of a burial for digging the grave, and a little cloth is given besides.

33. Co-operation.—There are no large factories in the province, but "kumhárs" seldom work singly. As a rule, at least two or three work together—the carrying, preparing and moulding of the clay and the superintendence of the baking being divided among the co-workers. Moreover, though the wife of a potter and his children under 15 are able to give no assistance in moulding pots, they help in getting and preparing clay, and in filling and tending the kiln, and the potter at his wheel is attended on by members of his family who bring him water, clay, &c., as required. The colouring of vessels with "geri" and ornamenting them with black lines is peculiarly the work of the potter's wife, and she also helps in carrying the ware out for sale and in selling earth in the towns, while the children look after the donkeys while they are grazing.

34. Other occupation usually followed by Potters.—Pottery work is at a standstill during the rains, because clay cannot then be property dried and prepared, and baking is impossible with the unprotected oven. Thus the potter, to live entirely by his trade, must make sufficient to keep him for the year in 8 months, for the compulsory suspension during the rains lasts from mid-June to mid-October. But he barely makes enough to support himself during the working seasons, and cannot afford to be idle for 4 months, though if he has laid in a good stock of pots he can realise double the ordinary prices for them during that period. He, therefore, has some other occupation which he follows in addition to his trade, and most often he is an agriculturist and cultivates his own land, as a tenant, or he works as a labourer for others. But he turns his attention to many other occupation as well, such as making salt-petre, sewing "tat borahs," weaving, plastering, &c. Town-potters and others living near towns combine brick-making with pottery, as a good profit can be made from bricks owing to the demand due to the fact that "kacha" houses are

being replaced by "pakka." An occupation which to a great extent is peculiar to the "kumhár," and which is of importance to the business of the country, is that of a carrier, which the "kumhár" adopts the more naturally, as the necessity of carrying clay for his own work compels him to keep one or more donkeys, and as these graze on the village common and cost little to keep, the carrying trade is a considerable source of profit. The potter is the ordinary grain-carrier of the villages, and is paid for taking grain from the field to the threshing-floor (except in the few cases when this duty is included in his "sep"), and he is employed by traders and middlemen to carry grain from villages to towns and railways. The donkey is also made use of in transporting earth for sale, chiefly for building purposes—to the towns in the neighbourhood—where it sells for 1 or 2 pice per bag.

35. Average earnings and general condition of Potters.—The average earnings of a potter who lives entirely by his trade are estimated in the reports at from 2 to 4 annas per diem, the price realized for the ware being nearly all profit and wages, as the clay, fuel and other materials usually cost nothing. On the whole, the village potter with "haq sep" is perhaps better off than the town potter, but the latter can earn more if he is a good workman, and has sufficient opportunities for selling his goods. The average price of vessels has risen during the last few years, but the cost of living has increased proportionally, and the real profits of the potter remain unchanged.

Altogether a potter is not generally able to do more than maintain himself and his family, and he is often drowned in debt. The fact that he will abandon his trade as soon as he can obtain enough money to enable him to start another, is a proof of the smallness of his profits. Whenever a "kumhár" has made a little money he starts as a contractor, or money-lender, or devotes himself altogether to the carrying trade, and so helps to swell the numbers of those "kumhárs" who are not potters.

36. Trade in pottery ware.—Owing to the method in which pottery is disposed of in exchange for "haq sep" and the manufacture of ware in small quantities in every village, no estimate can be made of the total outturn per annum. There is no import or export trade in rough ware, though a little is sent from Sirsa to Patiála and Bikanir, and about Rs. 100 worth per annum goes from Dera Gházi Khan to the Biloch and Pathán tribes—being taken to complete the loads of camels carrying other merchandise.

Inter-district trade is carried on by means of fairs, and "zamíndárs" occasionally go out of their district to get articles which are considered to be made better elsewhere. Thus "suráhís," &c., made with salted clay go from Kohát to Pesháwar and the Cis-Indus districts; the Ferozepore people go to Lahore to get goods, which they think better than their district goods; the Pesháwar ware is preferred in those districts to that made in Bannu and Hazára; and Dera Ismail Khan imports from Mooltan. But this trade is inconsiderable, and the price at which local made pottery is sold is so low as not to admit any profit on imported goods, which would not realise more than the local price, because, for all practical purposes, rough ware is made as well in one place as in another.

The finer goods are sometimes exported. Thus Rs. 50 worth of the Jhajjar ware goes annually to Delhi (but the ware is not said to be made in sufficient quantities to render export profitable), and the "kágazí" pottery is sent away for sale from the place of manufacture, as the local demand is very small.

37. General condition and prospect of industry.—The case of this latter ware and the Jhajjar ware, which are both superior to the ordinary pottery, show that the demand exists only for objects of simple utility, and that fineness of work does not pay. The demand for rough ware will never fail, as the pottery made is peculiarly adapted to the demand, but this demand is limited by the prejudices of Hindús, who believe that gold is purified by air, and silver and other metals by water, but that earthen-ware when once put to any use that requires purification is rendered useless, for the taint cannot be

eradicated from it. Hence they do not generally use pottery for eating and drinking from, though in some places, as in Ferozepore, Hindú Jats make use of it, and the poverty of the lowest and poorest castes of Hindús compels them to resort to it in place of the more orthodox brass and "kansi." But there is no objection to Hindús keeping grain, oil, &c., in earthen vessels, though for these purposes (among Hindús and Muhammadans as well) the common tin cannister in which oil is imported is coming into greater favour, to the prejudice of pottery. Moreover, among Muhammadans, the demand for unglazed pottery is decreasing, because whenever they can afford to do so they throw it over for metal vessels and imported China goods, which are at once more strong and more serviceable, and against which the "kumhár" cannot compete with his methods of working and the means at his disposal. The extent to which China is ousting pottery—chiefly unglazed ware, for little glazed ware is locally made—appears from the fact that last year Rs. 10,300 worth was imported into Lahore.

The potter strictly follows tradition, and apparently not a single new pattern or vessel has been introduced. Something may perhaps be done by teaching better methods of preparing clay and baking, thus saving the present large loss in the kiln; but the "kumhár" has not shown himself eager to adopt the improved method followed in jails, and the primitive nature of his tools, as well as his poverty, render it unlikely that the character of the common ware will be changed or improved; for there is no demand for better ware, and the industry will continue to be carried on in the future as it has been in the past, though a slight decrease in the amount of pottery made may be anticipated from the increase in the use of metal and imported China.

II.—Art Pottery, glazing and the manufacture of Toys.

A.—Art Pottery.

38. Centres of Art Pottery.—A trade in art pottery exists only in Mooltan and Pesháwar. Attempts have been made to introduce "káshigari" into Amritsar by inducing workmen from Mooltan and Sind to settle there, but they have failed. The introduction of a sort of porcelain manufacture into Delhi has, however, been more successful, and Delhi is now noted for its white pottery. Vessels are occasionally glazed and coloured elsewhere than at Mooltan and Pesháwar, but there is no regular manufacture as in those towns. A few potters, such as Muhammad Sharíf of Jullundur, are still able to make first class painted and glazed tiles, but the manufacture of tiles, which was once so extensive, has practically died out in the Punjab, and it is stated that even when tiles required for mosques and buildings can be prepared locally, the orders for them are not given to the local workmen. The obstacles in the way of art pottery are the lack of enterprise displayed by the workmen, the jealousy with which they guard their secrets in order to prevent competition, and the readiness they display to abandon old forms and methods suited to native work in order to adopt cheaper and less effective materials, such as dies, or English patterns that are unsuitable.

39. Mooltán Pottery—The Mooltan art pottery is known as "káshigari"; the makers are called "Káshigars," and are a distinct class by themselves. Mr. Kipling, in a note printed in the Mooltan Gazetteer, states that the Mooltan work had the same origin as that of Sind, but differs from it technically. Originally it was confined to the manufacture of tiles, slabs, &c., painted with text and other designs, and intended to be built into mosques, tombs and other buildings. But the native demand for this kind of work has died out, and a European demand has arisen which has entirely changed the character of the articles made, and "has developed a trade in flower-pots, large plateaux for decorative purposes, and many varieties of the comprehensive word vase."

39. (1). Manufacture and colours used.—The clay used is the same as that described as in use for rough ware, and the "Káshigar" does not himself make the goods he decorates. He buys from ordinary potters unbaked vessels made of good clay, well prepared, and then smooths the surface and fills in all

cracks and holes with sand. As the clay used is white, there is no necessity to coat the ware with chalk and gum as is done in Peshâwar and in Sind, and a coating of glaze made of "sufeda" (carb. of lead) 1 sér, "kánch" 1 sér, and ½ sér of gum, mixed in water is applied to the vessel, and flowers and designs are traced upon this. For this purpose artists (naqásh) are employed at 10 annas per day. The groundwork and designs are then coloured, light and dark blue and green being the colours most commonly used. The blue is obtained by applying "lájward" (*Lapis lazuli*) mixed with water, the mixture being thick for dark blue, and thin for light. Green is obtained from copper filings calcined as described by Mr. Baden-Powell. The "lájward" and copper oxide assume the required colours on baking, and after their application the pottery is covered with a glaze of "kánch" and gum, and dried, and then baked in a regular kiln with "jhand" (*Prosopis spicigera*) wood, which gives little smoke, care being taken to arrange the pottery so that the glaze shall not be damaged. A colour of recent introduction is brown, and for this the pottery requires two bakings. There is one baking before the glaze is applied, and one for the glaze, which consists of 1 part of "murda sang" (oxide of lead), 1 part of "qalai" (amalgam of tin and mercury) and 16 parts of lead.

The colours used can only be applied together within certain limits. Thus on a white ground designs can be brought out in light or dark blue, or green; white designs on a blue ground can be obtained by painting with "lájward," all except the part to be left white; and dark blue on light blue, or *vice versâ*, is obtained by applying "lájward" more thickly on the designs or on the rest of the pottery. On a brown ground designs in purple are obtained by using "anjaní" (an oxide of manganese), and designs in green by mixing copper oxide with the "anjaní." The brown colour cannot be produced on a ground of another colour.

The materials used are sold in the bázár at the following prices per sér:—"sufeda" Re. 1, "kánch." 4 annas, "lájward" Rs. 10, copper filings Re. 1, "murda sang" 5 annas, "qalai" Rs. 1-10, lead 5 annas.

39. (2.) **Price.**—The prices of the articles made depend on their size. A piece of work 6 inches high costs 3 or 4 annas, 9 inches high 6 annas, 12 inches 8 annas, and so on, up to 3 feet high, for which the price is Rs. 3-8. Pierced pottery is sold for higher rates, the price being 1 anna per inch, except for the larger sizes, such as 14 inches high, which costs Rs. 1-8.

39. (3.) **Number of workmen and condition of industry.**—There are only 5 shops of "káshigars," employing 15 workmen. Their profit is said to be 25 per cent. of the selling price of their wares, and average 8 to 10 annas per day, each shop selling about Rs. 600 or 700 worth of goods in the year. The demand is entirely European, and the goods are all exported. The demand, however, is decreasing, and the work is deteriorating in quality, as the newly introduced browns and greens are not so effective as the original blues, and deprive the work of its distinctive characteristics. European forms are also being copied, and badly copied, and a good deal of the ware made is on too small a scale to admit of its being effective, for the work is too rough to bear a close inspection, and loses its effect by attempts at minute execution. The "káshigars" are themselves very jealous of their secrets, and keep the trade in their own hands, and their industry is not therefore likely to spread.

40. Peshawar Pottery.—Mr. Kipling remarks that the manufacture of glazed pottery in Peshâwar for the native table is of ancient date, and may be considered peculiar to the district; for although European pottery is finding its way into Muhammadan households in many parts of India, there is nowhere else a local manufacture of glazed ware for eating and drinking from.

40. (1.) **Manufacture and colours used.**—Ordinary clay vessels are used as in Mooltan, but in Peshâwar the pottery is covered with a "slip" or coating of "kharia mittí" (chalk) and gum (prepared as described in "Punjab Manufactures," II, 225) in order to avoid the red colour to which the clay naturally burns. Red is obtained on this white ground by applying a soft red chalk, and black from a soft black stone, both obtained from the

Khyber Hills. Blue is got from "lájward," and green by mixing copper dust with the glaze. The basis of the glaze used is lead, and the vessels are carefully burned in a kiln fired with wood.

Chalk costs 5 annas per sér, the red and black earth costs 12 annas and Rs. 2 each; copper filings can be got from a copper-smith for 12 annas per sér, and lead is said to cost Rs. 2 per sér in Pesháwar.

40. (2.) **Prices and profit.**—The articles made are pierced desert plates, "surábís," brackets, vases, &c., and their prices are from 2 to 5 annas each. Thus a "jangla" (flower-pot frame) or plate costs 5 annas, a vase from 2 to 4 annas, a tea-cup and saucer 1 anna, and so forth. The profits average from 20 to 25 per cent. on these prices, and workmen get their food, and from 6 to 8 annas per diem; experts may at times obtain as much as Re. 1.

40. (3.) **Number of workmen and condition of industry.**—There are 5 makers of glazed pottery, of whom the most important is Shams-ud-dín. "When he is on his mettle he can turn out very good pottery, excellent in shape, colour and glaze, but more often he prefers inferior workmanship, and often his shop does not contain a single pleasing article." The district report says:—"The Pesháwar pottery is noted for its colouring rather than for form or design. When properly applied the copper greens and rich mineral colours combined with the thick clear glaze produce a distinct effect, which, though characteristic, might be considered rather *bizarre* than beautiful. There is a great tendency to subordinate form to relief ornamentation, and that of an inferior and debased kind copied from cheap European ware. Very few of the tiles now made are free from grave faults, but some blue and white made about 20 years ago, and used in the ornamentation of a 'musjid' in the city, show what good work might be turned out in Pesháwar under proper guidance. It is impossible to give any idea of the amount of art pottery actually sold here, but there is no doubt but that the greater care taken in other cities in India in weeding out bad forms has caused a falling off in the demand for Pesháwar ware." Mr. Kipling also notices that the workmen are turning their attention to jugs, tea-pots, &c., of European form, but he remarks that the local clay is not strong enough to allow any but thick and unsatisfactory copies to be made. He says:—"It is certainly not by attempting to copy delicate English modern ware that any improvement can be brought about. The materials are only capable of large and simple treatment. The present potters are incapable of good oriental patterns, and their scheme of colour is limited. With the co-operation of a good pattern draughtsman or 'naqásh,' who would paint the large and flowing arabesques for which the colours are suitable, and the addition of the easily acquired dark and light blue of Mooltan, the manufacture might be greatly advanced along its own natural lines."

41. **Delhi Pottery.**—The writer of the Delhi report was probably ignorant of the fact that that district contains a noticeable variety of art pottery in the white "porcelain" work which is now established there. He incidentally notices the fact that powdered "burbura" (disintegrated felspathic rock) mixed with "gond" (gum) is moulded into dishes, vases, &c., and goes under the name of "kám chini." But this is noted in "Punjab Manufactures," II, 227, and the district report has not attempted to supplement that note by giving particulars as to the outturn, number of workmen and present style of work. From Mr. Kipling's contribution to the Delhi Gazetteer it appears that though "burbura" has long been used in the manufacture of "martabáns," "dawáts," &c., it has only come into general notice during the last 20 years. The ware was exhibited in the London Exhibition of 1870, "when its fine texture of glaze, a rough duck-egg like coating, was admired by connoisseurs." Since the European demand arose new forms have been introduced, but "lack of enterprize and ignorance of the possibilities of the art have prevented it from being largely developed. The workmen have been dragged into notice with apparent reluctance, and do not cordially accept opportunities of making money. The ware, from the fact of the 'paste' being an artificial one, *i. e.*, compounded of powdered stone and gum, and not a natural clay, has to be made in moulds and cannot be freely handled and made in great variety of form on the wheel. It

is curious that so little has been done to improve the paste, as true China clay is found not far from Delhi, and is used habitually by the gold and silver-smiths for their crucibles." But this kaolin is not used by the Delhi potters, who are ordinary Hindu "kumhárs," for "the Delhi pottery in slackly burnt samples is almost pure sand, and can be rubbed into holes with the finger nail where the glaze does not hold it together. A mixture of the kaolin with the pounded stone ought to result, if it were sufficiently fired, in a good porcelain. As it is, in some of the best pieces the 'body' is semi-translucent. Blue and a pale green are the colours used for decoration. The patterns are poor in design, and though the general air of the product is delicate and pretty it has a somewhat sickly quality, happily described by a connoisseur as 'anæmic,' when compared with the fullness of colours and richness of pattern of Mooltan ware."

It may be remarked that kaolin is also found in the Himalayás, there being considerable deposits—for instance, in the Mandi State, which has been tested and found fit for pottery work. But there is no demand for pottery in the neighbourhood, and this kaolin could only be worked for export. A factory on a fairly large scale would have to be started, and it is not probably worth while to spend money on such an undertaking.

B.—Glazing.

42. Glazing districts in which the industry exists, and number of workmen.—The bulk of the pottery made is water vessels, and these require no glazing. Domestic vessels are seldom glazed, and, as a rule, no glazing is ever done except in the case of "martabáns," "rikábís," "piyálás," "chillams," "díwás," ink-pots and 'huqqás." Only 9 districts have any manufacture of glazed articles, and in each district the manufacture is represented by only one or two men as the following list shows :—

Karnál.—Has 2 men at Pánipat who can glaze and colour, and a few men who do a very rough kind of glazing.

Jullundur.—One man, Muhammad Sharíf, can glaze in colours.

Gurdáspur.—Three men at Batála use a dark brown glaze for ink-pots, &c.

Siálkot.—Four Kashmíris turn out coloured and glazed ware.

Gujrát.—One man, Umra, glazes in white, red or green colours.

Gujránwála.—Three makers of glazed and coloured ware.

Ráwalpindi.—Ornamental tiles and flower-pots and other ware is glazed and coloured : said to be 40 men in 23 shops.

Dera Ismail Khan.—Three men from Mooltan started glazing during the year.

Hoshiárpur.—One man at Tánda colours and glazes.

There is also a man in Dera Gházi Khan who can glaze, but he has given it up, because he says he has had glazed ware on his hands for 3 years, and is still unable to dispose of it. Some of those who know how to glaze are extremely jealous of their secrets, as, for instance, the Mooltanís at Dera Ismail Khan, who work with locked doors, and allow no one to enter till they have concealed the materials used. There was a man in Ferozepore who knew how to glaze, but he died last year without imparting his secret even to his brother, who lived next door to him, and glazing in Ferozepore has died out with him.

43. Glaze used.—The ware glazed is the common ware described under "Rude Pottery," and from the information given it appears that the ordinary glaze is simply "kánch," and that the lead glaze described in "Punjab Manufactures" is used only in Siálkot and Gujránwála, and in the Jails where glazed goods are made. The Hoshiárpur glaze is turpentine and mustard oil, and "ganda biroza" (resin of *Pinus longifolia*), and oil is used in Gujránwála and Karnál, while the rough glazing mentioned in the Karnál report is produced (simply by rubbing on mustard oil with a piece of cotton wool, and rebaking the ware. The insides of vessels are coated in Pánipat with "chapra" (shell lac.)

44. Colours.—English colours and aniline dyes bought in the bázár are largely used, but colours are also obtained as under :—

White.—From chalk and gum—the glaze being applied over this. Chalk sells for 16 sérs per rupee.

Black.—Ink is used, or the ware is blackened in the kiln as described under "Rude Pottery." "Rasaut" (the juice of the Indian barbery) is used in Hoshiárpur, and "kájal" (lamp-black) in Pánipat. In Gujránwála 8 parts of lead with 1 part of tin are reduced to ashes, and 2½ parts of a crystal ("bilour") are added as a powder: with each sér of this mixture ¾ sér "anjáni" (oxide of manganese) is mixed, and the whole is melted: after cooling it is reduced to a powder and applied to the vessel in a paste of "maida" and gum.

Red.—"Banni" is commonly used. "Sandúr" (oxide of lead) is occasionally applied; and in Gujrát the colour is obtained from "lohe ka mail."

Yellow.—Obtained by use of "hartál" (sulphuret of arsenic) which can be bought for 8 annas per sér. In Gujránwála 1 chitták tin and 1 sér lead are reduced to ashes and mixed with 1½ sér powdered "bilour": this is melted, cooled and powdered before application.

Sharbati.—(Orange or pale yellow) is got in Karnál and Gujrát by applying "hiramji," a coloured earth.

Green.—Obtained from oxide of copper or verdigris (zángár, támbe ka mail).

Vermilion.—From "shingraf" (red sulphuret of mercury), which sells for 10 tolás per rupee.

Blue.—From "anjáni" (selling at 4 sérs per rupee) and "shingraf," mixed in equal parts.

Brown.—Is obtained in Gujránwála by the mixture of "kánch" and flour with gum, and in Gurdáspur from "kánch" and borax.

A mixture of lead, "kánch" and borax is used by one man in Pánipat to obtain "a shining gold or silver colour."

45. Method of applying colours and glazes.—Gum is generally used with the colouring matter, though it is sometimes replaced by "máyá"—water in which rice, wheat or quince seeds have been boiled. Some colours are applied mixed with the "kánch," in which case the vessel is baked at once: others are applied separately, and the "kánch" is then coated over the colour before baking. In all cases only one baking is required, the ware not being baked before glazing as in England. In baking a regular kiln is required, and care has to be taken to place the ware so that it does not stick together. "Oplás" cannot be used, and the firing must be done with wood.

46. Trade in glazed ware and condition of industry.—Owing to the small local demand glazed ware is exported from the places where it is made. But glazing is usually practised by ordinary potters in addition to their usual work, and the total outturn and the amount exported is small. Prices range from 3 to 6 pies for a "díwa" to 1 or 2 rupees for a flower-pot. The profits appear to be little higher than those of rough pottery, though in Gujránwála they are as high as 10 annas per diem. On account of the very small native demand for glazed ware (roganí bartan), the man who has started in Dera Ismail Khan is said to have made no profit as yet, and any one who started elsewhere would probably have a similar experience. If the well-to-do natives require something better than the common unglazed pottery, they do not go to the local makers for glazed ware, but buy imported china. Hence glazing is not an industry that will increase in extent: it is more likely to die out, except in so far as it is kept alive by the supply to the Commissariat Department of cheap "gamlás" and the like.

JAIL POTTERY.

47. Jail Pottery.—Pottery is made in a very few jails, and jails, as a rule, simply supply their own requirements in glazed and unglazed vessels. Lahore supplies other jails besides itself, and the Commissariat Department at Mián Mír was formerly supplied with pottery by it, but since 1882 has obtained its requirements from a potter at Jullundur.

Two men usually work together, and they are said to make in one day 7 "surāhís," 20 "gharás," 100 "tinds" or 700 "piálás." About 50 per cent. of the selling price of the ware is reckoned as profit at Lahore and Ferozepore. The work is more carefully done than by the common potters, and the process followed in glazing, &c., are those collected by Abdul Ghafur in a Manual for jail use. The materials used for glazing and colouring differ in many cases from those in ordinary use, but I have not noticed them in detail, as this report deals only with the methods actually followed by the potters of the Province.

C.—The Manufacture of Toys.

48. Manufacture of toys.—The number of toy-makers (khilauna banánewale) is greater than that of persons employed in the manufacture of Art and glazed pottery, but toy-making is not a regular trade followed by any person as his sole means of subsistence. The sale of toys is chiefly carried on during Hindú "melás," and the maker prepares at a time only as many as he thinks will suffice to meet the demand at the fair at which they are to be sold. When a fair is approaching he and all his family set to work, the women and children helping in kneading the clay, filling the moulds, arranging the oven, and so forth, but when the fair is over the toy-maker returns to his regular employment, which is most often that of an ordinary potter. Toys are usually made in the figures of gods, men and animals, and the manufacture is therefore entirely in the hands of Hindús, for the Muhammadan is forbidden by his religion to make images.

49. Number of toy-makers and places where the industry exists.—The number of toy-makers and the places where they work are as under:—

Ambala.—195.

Hissár.—2 at Bhiwáni and 2 at Hánsi.

Rohták.—1 at Jhajjar and 1 at Sohána.

Gurgáon.—4 at Rewári.

Delhi.—25.

Karnál.—6 families at Karnál, 15 families at Pánipat, and 1 family at Kaithal.

Hoshiárpur.—10 at the Sadar, 5 in Anandpur, 3 in Dasúya and 2 in Tánda.

Jullundur.—24.

Ludhiána.—58 persons (including women and children) in Ludhiána, Jagráon and Machiwára.

Moóltan.—20 in the Sadar, and a few makers in the villages, who do not glaze or colour their toys.

Lahore.—300.

Amritsar.—About 25 families.

Gurdáspur.—Toys are made at Batála and Kalanaur.

Siálkot.—15.

Gujránwála.—6.

Ráwalpindi.—1.

Toys are also made in Ferozepore and Muzaffargarh: in Dera Ismail Khan they are not made, but bought without ornamentation and coloured and glazed. The number of toy-makers is thus between 500 and 600, of whom 300 carry on their business at Lahore and 195 in Ambala. These are all Hindús, but particulars as to castes are only given in the Siálkot report, which states that the toy-makers in that district are all Khattrís. The name "Kúzagar," which is applied to the maker of the better sorts of pottery, is also used to denote toy-makers.

50. Clay used and method of manufacture.—The clay used is of the common varieties (the more tenacious kinds being preferred), but it is not made so soft as for pottery work.

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Toys are made on the wheel, by hand or in clay moulds. The wheel used is sometimes a little lighter than the ordinary pottery wheel, and it is used to shape the round bodies of figures representing animals and men, or for turning out round toys such as those which resemble melons and other fruit. Heads and necks are made in clay moulds, which are made and baked by the potters themselves, and legs and arms are roughly shaped by hand and joined on to the trunk. Moulds are at times used for the whole toy, but most commonly for such parts only as can be detached from them without risk of breaking.

After joining together the two halves of a moulded toy, or the various pieces of a toy made in parts, an instrument called a "khurda" or "cholna" —such as is used in ordinary pottery work—is used to scrape away any inequalities in the joins, and to make the surface smooth. The toys are then smoothed with water, dried for 24 hours, and baked for a day or two preparatory to colouring and glazing. The oven is a hole in the ground, and a heap of alternate layers of toys and "oplás" is raised 2 or 3 feet high. The whole is domed over with mud-plaster, and a hole is left down the centre for the application of the fire. If damaged during or after baking, the pieces of a toy are stuck together again with baked clay, powdered and mixed with gum, and the toy is then coated with chalk and gum or water. When this is dry, the pattern to represent the clothes, beard, &c., is roughly traced, and colours, ground and mixed with water or gum, are applied with a brush of squirrel's or camel's hair, or with a feather. The methods in which the various colours are obtained have been described under glazing. Dyes and colours bought in the bazár are, however, most commonly used.

51. Glaze used for toys.—When the painting is complete glaze is applied over it. Where pottery is glazed, toys are glazed in the same way as the pottery, but the most common glaze for toys is a mixture of about 4 chittáks of "ganda biroza" (resin of *Pinus longifolia*) with 1 tola of mustard oil or some other oil. But chalk mixed with oil or gum, or with oil and turpentine, is also used, and occasionally a "kánch" glaze is applied. The cheapest glaze is that composed of "ganda biroza" and oil—each of which sell for about 4 annas per sér—and hence it is the most common. After re-baking the toys for the glaze, they are ready for sale, though further decoration can be effected by sticking on bits of artificial gold leaf ("warq chándi") to represent the trappings of horses, turbans, &c.

52. Price of toys and profit.—The price of the simpler toys depends on their size—3, 6 and 9 pies apiece being given for small, medium and large figures, but the amount of elaboration in their ornamentation causes the price of the best toys to rise to 1 or 2 rupees apiece. The makers sometimes sell toys to dealers for Re. 1 per cent.

A man can make 25 to 30 large, and 40 to 50 small toys in a day, his profit being $\frac{2}{3}$ or $\frac{3}{4}$ of their selling value. In Lahore the profits are said to be 4 annas per diem, but in other districts the average is higher, and is 6 or 8 annas per diem; though as the work is only carried on from time to time to meet temporary demands, as much as 12 or 13 annas are sometimes made per diem during the time spent in toy-making. The toy-trade at Lahore is probably a regular one,—as is indicated by the larger number of men employed,—and regularity of employment would account for the comparatively low rate of profit.

53. Trade in toys.—Judging from the figures given in a few district reports the expenditure on toys is fairly considerable. Thus in Jullundur toys to the value of Rs. 600 are locally made and sold in the year, and Rs. 200 worth are imported from Lahore and Delhi; in Ráwalpindi 6,000 toys, valued at Rs. 350, were made last year, and in Ludhiána Rs. 100 worth were sold; Lahore with its large number of workmen probably exports toys to other districts (no information is given on this point in the report); but as the industry is spasmodically carried on to meet temporary local demands there is no export from other districts. No trade with places outside the Punjab is reported.

54. Character of toys made and condition of the industry.—The toys made are extremely rough; it is with difficulty that one perceives what each is meant to represent, and both form and colour are very inartistic; a few

figures are shown in Plate IV. Efforts are being made in Amritsar to educate the taste of the public by the distribution of good plaster casts, but an invitation to the toy-makers to attend the Normal School met with no response. The toy-makers said they would come if assured of larger profits than at present, and had no doubt correctly guaged the popular taste for cheap and gaudy articles in preference to those which exhibit greater artistic beauty at a higher price. Europeans have not influenced the fashion in toys, except by furnishing models for the grotesque figures that abound of Sáhibs and Memsáhibs, soldiers, policemen, and the like, and the terra-cotta figures made at Ambala by an old man named Husainí are copies, made in moulds, of English models bought in the bazár; but he makes very few of them, and depends chiefly on his work as a potter, for he has no market for his goods. A notable use to which the skill of a toy-maker in Delhi has been turned is in making terra-cotta models of snakes, copied from the plates in "Thanatophidía" and other books which are beautifully made and coloured. The present style of toy is characteristically Indian and must remain unchanged till the "zamíndár" and other buyers of toys have acquired some of the rudiments of artistic taste. Under the conditions in which the industry is carried on it is unlikely to increase in extent, but, on the other hand, the import of cheap German and other European toys of wood and tin is said to be making its influence felt, and the native industry, small as it is at present, appears to have a still more restricted future before it.

III.—Glass.

55. Glass manufacture.—The manufacture of glass in the Punjab is divided in two branches, *viz.*, the manufacture of glass bangles called "chúrís," and the manufacture of bottles, chimneys and other articles. Nearly all the glass-workers in the Province are "chúrígars," and they are found in 17 districts.

56. Glass used, whence obtained or how made.—The glass of which "chúrís" are made is called "kánch," but its composition varies, because the materials out of which it can be made, and which can be locally obtained, are various. Glass-workers in Ambala, Siálkot, Amritsar and Lahore prefer to import their "kánch," and can get it from Delhi, Agra or Mainpuri at Rs. 2 or or 2-8 per maund. In Hissár also "kánch" is not made, but old glass, "kánch" and broken "chúrís" are bought up at Re. 1 per maund and re-melted for use. The commonest way of making "kánch" is that of mixing together equal parts of powdered sandstone and "sajji" (carbonate of soda, usual price Rs. 3 to 4 per maund) and melting them together. This is the method followed in Lahore, Jhelum and Pánipat (for "chúrís") and also in Mooltan and Dera Gházi Khan, which both get their stone from Sakhi Sarwar: it costs Rs. 2 per maund in Mooltan. But Jhelum, like Lahore, is taking to importation from Delhi; for though both sandstone and "sajji" are obtained locally, it is found that the large amount of firewood acquired for the manufacture renders the local "kánch" more costly than the imported. In Gurgáon "reh" is mixed with saltpetre and heated for one night over a slow fire, after which it is subjected to fierce heat for a day.

Rohtak "chúrígars" use an alkaline earth found near Wazírpur and Báblí in Gurgáon, and which costs them nothing but carriage. "Kánch" is made from this by simply mixing it with water and heating it.

In a maund of the "kánch" used in Hoshiárpur there are the following materials: 3 sérs of "sajji" are pounded with 2 sérs of quartz and mixed with water. This mixture is made into balls (pinnás) which are heated to a red heat and then cooled and pounded. 1¼ sérs borax, 1¼ sérs saltpetre, and 1¼ sér "kallar" is mixed to the powder thus obtained, and the whole is put into the furnace in an earthen vessel, and after 3 days' heating it forms "kánch." Borax cost Rs. 5 per maund, and saltpetre Rs. 8 per maund.

The Kángra "kánch"—which, like that of Hoshiárpur, is used for bottles, &c., besides "chúrís"—is made from a mixture of lac, charcoal and "sajji," and in Peshawar the glass, also used for bottles, &c., is made from European glass, tin, copper, zinc, "sajji" and lead.

The finer kind of glass used at Pánipat is made, as described in "Punjab Manufactures," II., 237, of red sandstone, "sajji" and saltpetre.

57. Furnace used for glass-work.—The method of working "kánch" and the description of furnace and tools used is uniform. The furnace (see Plate V) is "pakka" and built partially underground. It has a dome above the ground level which is pierced by 4 or 5 openings. Inside each opening a bracket or ledge of earth is built against the wall to serve as a rest for the crucible (bárá) in which the "kánch" is melted for use. Screen walls run out from the dome, so as to form a separate compartment before each opening, and each compartment is used by one workman. Before the spot where the workman sits, a stone slab, called "patri," is fixed in the ground, and in front of this again there is a sink. As great heat is required, the furance is always fed with wood—kikar and farrásh being preferred, and costing about Re. 1 for 2½ maunds.

58. Instruments used in glass-work.—The instruments used in glass-work are described in "Punjab Manufactures," and are represented in Plate V. They are—

1. "Ankri" or "kundi."—An iron rod about a foot long, with a curve or hook at the end.
2. "Sínkh" or "sallákh."—A long pointed iron rod.
3. "Mála."—A narrow iron bar (not a spoon).
4. "Trakla," "Tarkla" or "Tirkla."—An iron rod which has a thick butt and tapers off to a point. Called "phala" if fitted with a handle.
5. "Kálbút," a cone of clay fixed on the end of an iron rod. The whole instrument is called "salendhi," "sarkandi" or "sarbandi," and the clay cone is known as "kalbút."

An iron spoon ("kharoha" or "kharchi"), tongs and bellows are also necessary articles in a glass worker's outfit, as well as the "nálí" or blowpipe, and "thappas" or stamps are sometimes kept for the purposes of impressing patterns on "chúrís" as afterwards described.

59. Method of making "churis."—To make "chúrís," the furnace is heated and a crucible filled with powdered "kánch" is placed on the ledge inside. When the workman—by testing with an iron rod—finds that the a "kánch" has melted into a thick viscous liquid, he takes up enough to form add "chúri" on the hook of his "ankri." The "kharcha" is used, if necessary, to powdered "kánch" to the crucible in place of that just extracted. The "ankri" is held in the right hand, and the "kánch" upon it is wound round the "sínkh" which the workman holds in his left hand. A thick ring is thus formed, which is slightly cooled and detached by resting the "sínkh" on the "patrí" and striking it gently with the "mála." The ring is then put on to the end of the "takla," which is put to the furnace through the opening before the workman, and as the ring is heated it is twirled round and round on the point of the "takla," so that it becomes thinner and larger. When the ring has opened out sufficiently, it is transferred to the "kalbút" which is rested upon the "patrí" and spun round. The "takla" is used to adjust the "chúrí" upon the cone, and when the hot ring has reached the required size it is slipped off the "kalbút" into the sink of water.

60. Method of coloring "kanch."—"Chúrís are sold either plain or ornamented, and plain "chúrís" are made of various colors. The colour is obtained by using colored "kánch" or by coloring "chúrís" of white "kánch" after manufacture. The imported "kánch" which is sold can be had of all colours, though green, yellow and white are preferred. When "kánch" is locally prepared, it is colored by adding lead and "qalái" to the materials used, with copper filings for green and "anjáni" for purple. The amount added to one maund, while "kánch," for each color is as follows:—

For "Asmáni" (sky blue)	10 chittáks copper
„ "Uda" (purple)	10 „ "anjáni."
„ "Zard" (yellow)	8 sérs lead, 2½ sérs tin and 12 chittáks quartz.
„ "Sabz" (green)	½ sér copper, 2½ sérs tin and 8 sérs lead.
„ Red	½ sér copper, ½ sér iron filings and 4 sérs black "kánch."

61. Ornamentation of "churis" by "churigars"—"Chúrígars" as a rule simply make plain "chúrís," but they also practise one method of ornamentation, which is thus described in the Siálkot report:—"The rims of "chúrís" are ornamented by heating them and melting fine rods of glass and applying them. These rods are made by taking some melted "kánch" on the hook of the "ankrí," and drawing it like wire. They are made about 3 feet long and about $\frac{1}{16}$ of an inch thick, of different colours: sometimes black and red or black and white "kánch" are drawn together and twisted so that when it is laid on the rims of the "chúrís" it gives them a dotted appearance, black and red, or black and white dots alternating. These rods are called "sar," and this kind of ornamentation is done at the furnace by the workmen."

62. Cost of manufacture of "churis," profit and wages.—A workman can make an average of 400 large or 600 small "chúrís" in a day, though if he be expert he may make as many as 1,000 large and 1,500 small ones. Twenty sérs of "kánch" give from 4,000 to 5,000 "chúrís" and require about 2 maunds of fuel, and though with the different methods of making "kánch" the cost of manufacture varies, it is on an average from 4 to 8 annas per 1,000 "chúrís." The wholesale price realised by the "chúrígars" is from 8 to 12 annas per 1,000 and a workman's profit may thus be reckoned as 2 annas per diem or more, in proportion as he is more skilful. The district reports give estimate at from 2 annas to 8 annas per diem.

In factories in large towns, master workmen employ journeymen, but only two reports give particulars of the average wages. In Mooltan, where the master's profits are estimated at from 5 to 12 annas per diem it is said that journeymen get 2 to 4 annas per 100 "chúrís," but as the daily average outturn there is stated to be from 400 to 600 per man, this would amount to a wage of from 8 annas to Re. 1-8 per diem and as the price of "chúrís" is only 6 to 8 annas per 1,000 this must be a mistake. The Siálkot report—a very careful one—states that a hired workman is provided with a house, materials and tools, and gets $\frac{1}{8}$ of the value of the "chúrís" he makes, so that a good workman if he makes 1,000 to 1,500 "chúrís" selling at 9 annas, can earn 3 annas per day.

63. Numbers of "churigars" and places where the industry is carried on—The accompanying table gives particulars, according to the district reports, of the number of "chúrígars" and the localities in which the industry is carried on:—

No.	District.	Number of factories.	Number of chúrigars.	Remarks.
1	Hissár	...	..	Manufacture limited—no particulars as to numbers.
2	Rohtak	2	30	Factories at Dawalah and Rankandah—90 persons are supported by these works.
3	Gurgáon	2	40	The two factories are at Sohna and employ 10 men each. The other glass workers are distributed over 4 or 5 villages.
4	Delhi	...	...	No statistics given. The report refers to the glass industry, thus "Looking-glass making is fully described in Mr. Baden-Powell's Manual, page 239, and there is no necessity of repeating here. No more information can be furnished here." But "chúris" are said to be made in Delhi, and are certainly sold in large quantities, and they are also exported to other districts.
5	Karnál	...	...	In addition to other glass-work at Pánipat "chúrís" are made—no statistics given.
6	Ambálla	...	...	The report says there are 256 Musalmán and 91 Hindu Maniárs in the district, but also says that very little glass-work is done. The figures given are very doubtful.
7	Kángra	15	50	"Chúrígars" also make bottles, glasses and "chorpánís"; work a Sujánpur, Nádaun and Mair in Hamírpur tahsíl and some places in Núrpur tahsíl.
8	Hoshiárpur	...	...	Best work at Dasúya, where cups, glasses &c., are made, of coloured "kánch"; glass-work in seven villages altogether.
9	Mooltan	8	58	.....
10	Lahore	8	61	Figures given for "chúrígars" alone: in addition there are three shops of chimney-makers employing six men.
11	Amritsar	...	...	"Chúrís" made—no details in report.
12	Siálkot	...	...	160 persons (including women and children) depend on glass work.
13	Jhelum	7	28	All the work done in the village of Sultánpur.
14	Ráwalpindi	29	83	Glass work in Baigan village, Tahsíl Gujar Khan.
15	Pesháwar	...	...	Greater part of work in one man's hands. He makes other articles in addition to "chúrís," but only occasionally.
16	Dera Ismail Khan.	4	24	
17	Dera Gházi Khan	9	31	

The statistics given are incomplete, but they show that the number of persons employed in "chúrí" making is very limited, and probably not more than 700 or 800.

64. Factories.—Except in Rohtak, where two factories apparently employ 15 hands apiece, there are no factories employing more than 10 hands. But co-operation is the rule in the industry. The fuel used in the furnace is wood, and a large amount is required, while it takes no more to melt the "kánch" for several working together than for one man. Hence the industry exists only in towns and large villages, the average number working at one furnace, being 5, who are either partners or workmen paid by the furnace-owner. The furnace, as described above, is built with several openings to accommodate several workers at one time, and if a man works by himself without help, he does so in a very rough way, using a grain parcher's oven instead of a regular furnace.

65. Employment of women and children.—Women and children are never employed in glass manufacture in any capacity whatever. But women are often connected with the distribution of the manufactured goods, for they frequently buy them to retail in the "zanánás."

66. Retail sellers and price of "churis."—"Chúrígars" sell their plain "chúrís" to retail dealers—chiefly "Maniárs" or "Bangiárs" who ornament them and take them into the villages for sale. The "Maniár" gives 8 to 10 annas per 1,000 for plain "churís," and spends 12 to 15 annas in ornamenting them. He then sells them by the "jora" or set of 36, or by the hundred or dozen. Sets, if plain, cost 2 or 3 pies, and 1 or 2 annas if decorated, but the price, of course, varies with the quality of the goods; plain "jorás" sometimes sell for 2 annas and decorated "jorás" at 4 or 5 annas, while if the ornamentation is done very well, a pair of "chúrís" may cost from 1 to 4 annas. On the whole, the hawker's profit appears to be about 4 annas per rupee.

67. Method of ornamenting "churis."—"Chúrís" are usually ornamented by heating them over a charcoal fire and coating them with lac. "Shingraf" is used for red and charcoal for black, and the color is powdered over the lac and adheres to it. Sometimes sticks of the adhesive matter mixed with the colouring matter are made up, and applied to the "chúrís" after heating. "Poth" (beads) "mina" (scraps of coloured glass) and tin foil may be stuck on after the lac and colour have been applied.

A way of ornamenting "chúrís," which is sometimes followed, is to lay on a coat of sealing wax, and cover this with gold or silver foil—which is then brought out in relief by means of dies or "thappás" of different designs.

68. "Churigars" caste, &c.—"Kánch" bangles are usually known as "chúrís," but in Mooltan and some other districts they are called "vang." The bangle-maker is always a Mussalmán (Hindús are mentioned in the Umballa report only), and according to the local name for bangles, he is called either "chúrígar" or "vangrigar." It appears that he occasionally is not paid for "chúrís" supplied to a girl before marriage, but at the marriage gets about 1 rupee 4 annas and a suit of clothes. This method of payment seems to show that the "chúrígar" is looked on as a sort of "sepi," but it is very uncommon. "Maniárs" or "Bangiárs" and "Kachers" are found as "chúrí" makers, but the former are rather retailers of goods obtained from "chúrígars." When the demand is slack—as in Kángra—the "chúrígar" is not able to live entirely by his trade and has to resort to agriculture or some other means of support. But in the Punjab plains the demand is large and not likely to fall off; the only thing the "chúrígar" has to fear is the competition of cheaper and better goods imported from the North-West Provinces, but as long as he has a good connection with the "Maniárs," he is kept fully employed at his trade.

69. Customs relating to "churis."—"Chúrís" are worn both by Hindú and Muhammadan women. Among the latter they are always worn by a bride on marriage. In the North-West Provinces all Hindús—except "Sarsut Brahmans" and "Khatris"—wear "chúrís," and regard them as semi-sacred objects, for if one should accidentally break, its pieces must be collected and kissed three times, and every Hindú woman wears "kánch" bangles till her

husband's death and she then breaks them with a brick or stone, and puts on gold or silver bangles in their place—the wearing of bangles not of "kánch" being the mark either of a widow or of a prostitute.

70. Conditions and prospects of "churi" industry.—These customs are not so strictly observed in the Punjab, but even so the "chúrí" is much worn, for it is a cheap and gaudy ornament, within the reach of the poorest and appreciated by the natives. It is not, however, probable that the manufacture will extend in the Punjab, unless large factories are established where saving in cost can be combined with an increase of quality, for the North-West Provinces manufacturers are able to undersell the local "chúrigars," and supply a better class of goods, which are readily bought. The local makers cannot compete against the importers by reducing their prices as they have to contend also against a rise in the cost of manufacture. "Sajji," most commonly used for making "kánch," has risen in price from 12 annas to 3 or 4 Rs. per maund, and wood is getting dearer then before, while the smallness of the factories offer no facilities for the introduction of appliances to economise labour and expense.

71. Trade in "churis"—The statistics given of the amount of import and export for districts where "chúrís" are made are very imperfect; for districts where they are not made, no reference is made to any import. Local demand, however, does not depend simply on local supply, for the fashion of wearing "chúris" is widespread and capable of being gratified very cheaply, besides having some degree of religious or social meaning, and when we find that Rohtak spends Rs. 18,000 annually on them, while about Rs. 5,000 per annum is spent in Mooltan and Rs. 4,000 in Dera Gházi Khan, it is certain that there must be a large import into districts where "chúrís" are not made. But the reports make no mention of any import, and no idea can be formed of the annual value of the "chúrís" that are made in and come into the Punjab. It is, however, clear that large quantities come in from the North-West Provinces, especially from Meerut, and there is also a small import from the villages of Sanjuan and Bhimbar in Jammu, whence "chúrís" to the annual value of Rs. 1,000 are imported into Siálkot.

Delhi, Lahore and Mooltan would appear to be the chief centres of inter-district trade, and there is also some export from Panipat. Kángra sends "chúrís" worth about Rs. 1,000 per annum into the neighbouring Hill States.

72. Manufacture of glass articles other than "churis."—The manufacture of articles other than "chúrís" is carried on in six districts only *viz.*, Karnál, Kángra, Lahore, Pesháwar, Hoshiárpur and Delhi. Except in Lahore it does not exist as separate from "chúrí" making, but in Lahore there are three shops of chimney-makers (chimney sáz) employing six men.

Looking-glasses are made in Delhi, and the Shahpur report mentions that they are repaired at Bhera. Looking-glasses are made as described in "Punjab Manufactures," but I am unable to give any statistics as to the trade.

The "kánch" used for bottles, &c., the composition of which has been already mentioned is either blown or moulded. Bottles are blown inside a mould which gives them the correct shape, and the mouths of bottles and chimneys are opened out, while the glass is hot, by the use of a pair of compasses. Moulds are used for glasses, cups, "garwas," &c., such as those made at Dasúya in Hoshiárpur. The articles usually made are glasses, dishes, phials for attar and scent, beads and pieces of colored glass, and "chorpánís" or shíshís. The "shíshí" is a popular toy, and consists of a glass tube terminating at each end in a bulb and enclosing a small quantity of water. The tube is narrowed in the centre by a ring of thread and the slow procession of air bubbles that ensues on reversing the tube is the point and interest of the toy," (Karnál Gazetteer). "Kum-kuma" or silvered globes are made at Pánipat and in Kángra. The method of silvering the glass with a mixture of lead, tin and mercury is described in "Punjab Manufactures," II—238. These silvered-globes are broken up, and the pieces are used as mirrors in "ársís" or spangles on cloth, but English globes are now imported and are preferred to those made here. "Huqqa" bottoms are made in Kángra for about 8 annas apiece.

73. Prices and profit.—The prices of all articles vary greatly in the different districts, but the cheapest glass work is made in Pesháwar; "chorpánís, for instance, sell there for 5 annas per dozen, while they cost Re. 1 2 annas per dozen in Kángra. The profit on bottles, &c., is the same as on "chúrís' and is not separate from it, as bottle-makers are all "churígárs" as well. The profits of a "chimney-sáz" at Lahore are about 4 annas per diem; two workmen can turn out 2 or 2½ dozen chimneys is one day, and a dozen chimneys cost about Re. 1-13 annas to make, and sell for Rs. 2.

The best glass in the province is made at Pánipat; the glass there is of very good quality, and sells for Rs. 10 per maund. The factory employs only one skilled workman, who is paid 12 annas per maund of glass made, and is assisted by 3 or 4 men at 3 annas per day. 100 maunds of glass can be made in 25 days for Rs. 864, (the most important item in the cost being Rs. 500 for 2,000 maunds of wood), and sells for Rs. 1,000, but as the work is at a standstill during the 4 months of the rains, the average profit of the glassmaker is reckoned at Rs. 100 per mensem, while the skilled workman gets an average during the year of Rs. 50 per mensem.

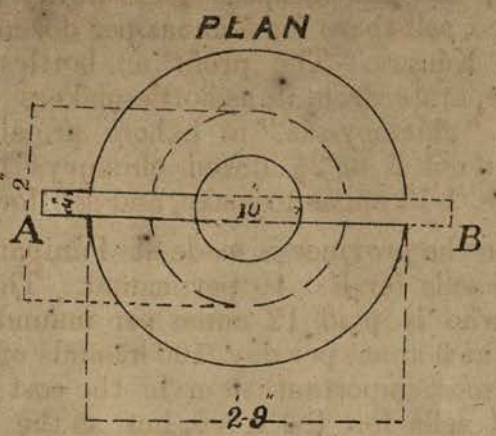
74.—Trade in glass-ware.—Very few details of import and export are given in the reports. The Jullundur report is the only one that gives a complete estimate, and from that it appears that Jullundur annually imports from Delhi bottles worth Rs. 1,860, chimneys worth Rs. 1,708, looking-glass, and panes worth Rs. 1,881, and miscellaneous articles worth Rs. 1,512, while from Lahore it imports Rs. 600 worth, of which Rs. 100 worth are buttons. Lahore last year imported Rs. 16,230 worth of glass; the place whence imported is not stated and the total import is said to have been used locally, but the glass was probably European, and a great portion of it must have been distributed over the province. The import into Delhi is perhaps greater than that into Lahore, for the figures for Jullundur would seem to show that Delhi is the chief centre of the glass trade, but no import or export is mentioned in the report.

75. Prospects of Punjab Glass Manufactures.—While rough articles are good enough to suit the purposes for which the natives require them, large and small bottles will be in demand till European goods become cheaper, but the articles made here are not of a character to compete with imported goods. The manufacture of glass can only be effectively and economically carried on, on a large and permanent scale, for the cost of fuel is one of the largest items of expense, and this can be reduced only by the erection of proper furnaces. The small scale on which the industry exists in the Punjab, and the import of good and cheap ware, render any advance in the character or extent of the local industry unlikely, and unless vitality is imported to it by the foundation of large works (of which there is no prospect) glass-making will continue to exist as one of the unimportant industries of the province, for as long as there is a demand for such peculiarly native articles as the "chúri" and the "chorpáni" there is no fear of its extinction.

SUKET:
Dated 8th February 1892.

C. J. HALLIFAX, C.S.,
Counsellor to His Highness the Rája of Suket.

PLATE I.



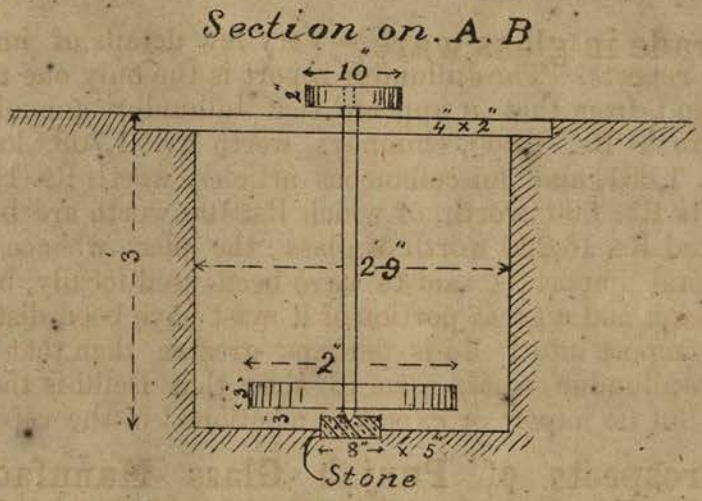


Fig. I.
(CHÁK LAKRI)

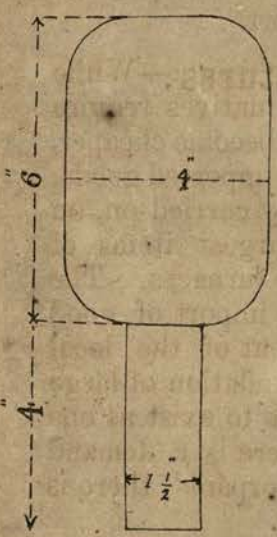


Fig. 3.
(THAIWA)

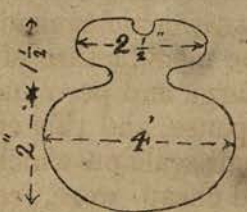


Fig 4
(KONERA)

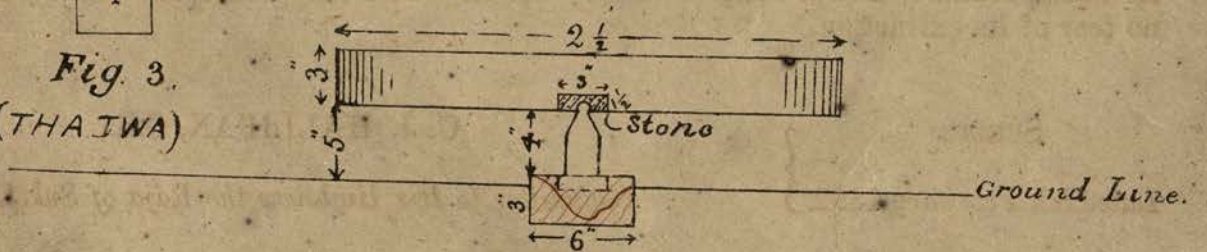
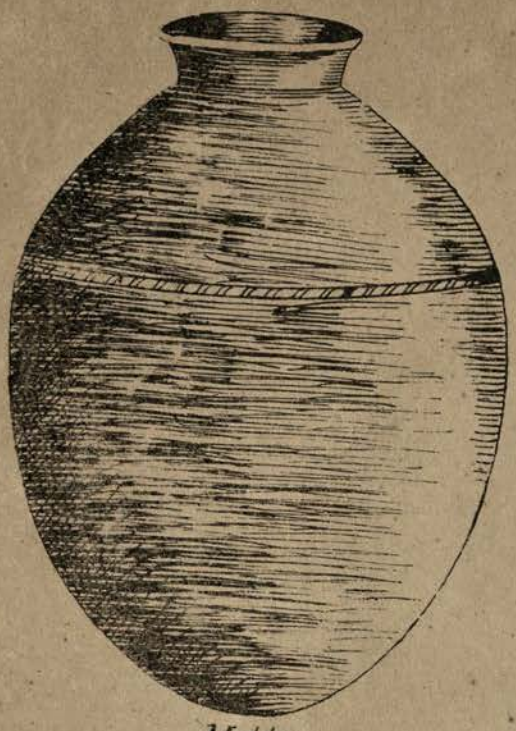


Fig. 2.
(RÁM CHÁK)

Scale 2 feet = one inch for Plan & Section.
Scale 3 inches = one feet.
Scale one inch = one feet for Section.

PLATE II.

1



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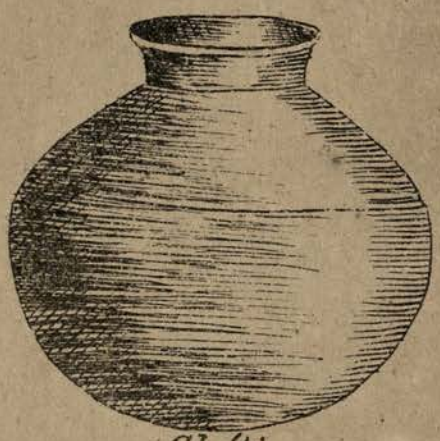


Cháti

3

Ghara

4

Soráhi

5

Lotá

6

Hándí

7

Tabaq

8

Rakábi

9

Piálá

10

Martabán

11

Dohná

PLATE III.

12

Maghi

13

Kullar

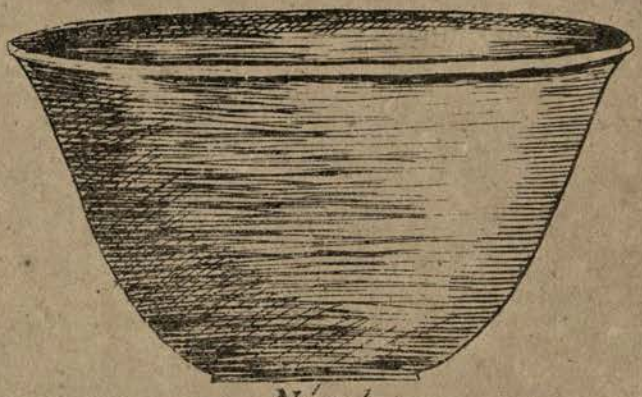
14

Thathi

15

Tind

16



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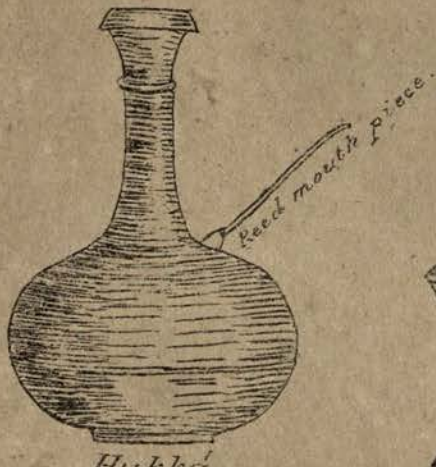

Hukká

18

Chilm

19

Chilm

20

Diwa

21

Dawát

MONOGRAPH

ON THE

SILK INDUSTRY

OF THE

PUNJAB,

1899.

IX
4

Published by Authority.

Price 8 annas or 1 shilling

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1899.

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1899.

No. 1064.

FROM

A. H. DIACK, ESQUIRE,

Revenue and Financial Secretary to Government,

Punjab and its Dependencies,

To

THE JUNIOR SECRETARY TO THE FINANCIAL COMMISSIONER, PUNJAB.

Dated Lahore, 29th November 1899.

File No.

Revenue and Agriculture.

General.

SIR,

IN acknowledging the receipt of your letter No. 842,* dated the 20th of November 1899, forwarding a Monograph on Silk Fabrics in the Punjab, compiled by Mr. W. M. Hailey, C. S., I am directed to say that the Lieutenant-Governor concurs in the Financial Commissioner's commendation of Mr. Hailey's work.

* Sub-head No. 701. File No. 160.

I have, &c.,

A. H. DIACK,

Revenue and Finl. Secy. to Govt., Punjab.

Punjab Government Press, Lahore—7-12-99—580.

No. 842, dated Lahore, 20th November 1899.

From—A. H. GRANT, Esquire. Junior Secretary to the Financial Commissioner, Punjab,
To—The Revenue and Financial Secretary to Government, Punjab.

Sub-head 701.
File No. 160.

I AM directed to forward 5 copies of a Monograph on Silk Fabrics in the Punjab, compiled by Mr. W. M. Hailey, C. S., recently Junior Secretary to the Financial Commissioner, which was called for in your letter No. 632, dated 1st October 1898.

2. It will be remembered that a Monograph on this subject was published some 12 years ago, and that as this was not, in the Lieutenant-Governor's opinion, sufficiently comprehensive and up to date, orders were issued for the preparation of this new Monograph. Mr. Hailey, has, Mr. Thorburn thinks, fulfilled his task thoroughly, not only remedying the deficiencies of the previous work; but introducing a great deal of new and interesting matter.

3 In the first part of the Monograph Mr. Hailey deals with the natural history of the silk industry, dividing silkworms into two classes "wild" and "domesticated" giving a careful resumé of the varieties of each found in the Punjab. He next turns to Sericulture, dealing first with the somewhat abortive efforts made by Mr. Coldstream and others to cultivate the *wild* silkworm, secondly, with the cultivation of the *domesticated* or mulberry-fed worm. Of the latter Mr. Hailey has given a full and interesting history. The story is not a very bright one. "The experiments have always held out fair promise at starting: they have always ended more or less disastrously." Mr. Hailey considers that Sericulture will never become popular with natives without considerable encouragement *ab extra*. The encouragement hitherto given, has, in Mr. Thorburn's opinion, been often very half-hearted.

4 The third part of the Monograph is devoted to a comprehensive survey of silk manufacture in the Punjab, its extent, the classes of silk imported, and the centres of manufacture.

Mr. Hailey then devotes some pages to a careful account of the various processes of manufacture, which is made the more intelligible and interesting by several illustrations at the end of the Monograph.

5 The next heading deals with "articles produced," being a description and list of the woven fabrics of pure silk, netted silk, silk and cotton goods, and embroidery. In most instances the price per yard, always a matter of interest, is given. Finally, Mr Hailey deals with the question of the use of silk fabrics. Although pure silk goods are perhaps being displaced to a certain extent by mixed cotton and silk goods and "the gaudy imitations of Manchester," yet the fact that the *registered* value of the raw silk used, is 23 lakhs, and that some 25,000 persons are engaged in its manufacture, shows how alive the Silk Industry is.

I am directed also to forward a file of specimens of silks collected and arranged by Mr. Hailey.

6. In conclusion, I am to say that Mr. Hailey has, in the Financial Commissioner's opinion, compiled a most complete history of the Silk Industry and the most comprehensive work of the sort yet produced in this Province. The best district reports were received from Mr. Joseph, Assistant Commissioner, Delhi, Mián Ilm-ud-dín, Extra Assistant Commissioner, Jullundur, Mr. L. White King, Deputy Commissioner, Kohát, Lála Tilok Chand, Extra Assistant Commissioner, Mooltan, Mr. C. H Atkins, Deputy Commissioner, Lahore, Mr. J. Bellew, Amritsar, and Lieutenant Ramsay, Assistant Commissioner, Peshawar.

Punjab Government Press, Lahore—7-12-99—580.

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SILK INDUSTRY IN THE PUNJAB.

1. In Punjab Government letter No. 632, dated 1st October 1898 (Revenue—General) directions were conveyed for the preparation of a monograph on the Silk Industry of the Punjab, and it was remarked that "as the Punjab Monograph on this subject is now eleven years old, the Lieutenant-Governor thinks that a revised compilation should be made."

2. The interest attaching to the Silk Industry in the Punjab is largely historical. This is true not only of the silk weaving industry, but also of that of sericulture. At the same time efforts are so constantly being made to encourage sericulture in Northern India, and hopes so frequently expressed that the climate of some parts of the Punjab will eventually be found suitable to the systematic cultivation of the silk worm, that it may be permissible to extend to the whole subject a somewhat wider treatment than would result from merely bringing Mr. Cookson's Monograph of 1885-86 up to date by the correction of the figures relating to District industries.

Natural History.

3. For practical purposes silk producing *Lepidoptera* may be said to be divided into two main classes, *mulberry fed* and *non-mulberry fed* silkworms. The former are usually known as *domesticated*, the latter as *wild*, though as a matter of fact there are several species of non-mulberry feeding silkworms which have been continuously reared in a state of domestication. In dealing with the subject at its present stage, it will be useful to retain this distinction, which also, as a matter of fact, corresponds clearly with the entomological classification of silkworms into their two main classes *Bombycidæ* and *Saturniidæ*.

(*a*).—*Non-mulberry feeding, or "wild" silkworms.*

4. It is claimed by Sir T. Wardle, in his "Hand-book of Indian wild silks in the South Kensington Museum" that the "wild" silks of India may, with the aid of enterprise and capital, yield to systematic collection and cultivation a result as profitable as that which has attended the scientific culture of tea and cinchona. It has more than once been contended that the climatic conditions of this country are far more favourable to the development of the industry in "wild" silks than of that in the produce of the mulberry feeding worm. The subject, therefore, is one of considerable importance, and claims a prominent place in any treatise dealing with the potential resources of an Indian Province. It would appear from the "Dictionary of the Economic Products of India" that there are in all thirty-one species of *Saturniidæ* or "wild" silk worms found in India. It is admitted, however, even by those who may not unfairly be described as the professed champions of the "wild" silkworm, that only three of these species have so far been proved to be of any economic value: *viz.*, the *Antheræa paphia*, (Hindi, *tusuru*) which yields the *tasar* silk of commerce, the *Attacus ricini*, or castor oil silkworm which yields the silk known as "*eri*," and the *Antheræa Assam* or *múga* worm which produces the silk known as *múga*. It is not necessary to enlarge here on the value of the *tasar*, *eri* and *múga* silks. No one of the three silkworms mentioned above is at all common in the Punjab. Although the Province is shown by Sir Thomas Wardle as one of the places where the '*tasar*' moth is common, yet the *Antheræa paphia* or *tasar* moth proper is, says Dr. Watt, "practically absent from the Punjab," and the moth known as the "*tasar*" in the Province is not the true *Antheræa paphia*. The *eri* silkworm is not found at all, and though one authority includes Kángra in his list of the districts where the *múga* worm is found, it would not seem that this is correct. It is, indeed, probable that it is not found further west than Dehra Dún. While, however, the Punjab is thus entirely deficient in the "wild" silkworms which are commonly recognized as those of chief economic value, there are a certain number of *Saturniidæ* found in the Province, some of which are capable of yielding silk. These are altogether eight in number, *viz.*, the *Actias Selene* (Simla), the *Antheræa Roylei* (Simla), the *Antheræa Sivalika* (mainly in Hoshiárpur), *Attacus Canningi*, (Murree), the *Attacus Cynthia* (Simla and Kángra), the *Caligula Simla* (Simla),

the *Rinaca Zuleika* (Simla), *Saturnia Grotei* (Kulu). It will be seen that these silkworms are found, with one exception, in the Upper Himálayas. The *A. Selene* exists in fair numbers, but its silk appears to have no commercial value; this is also the case with *A. Roylei*, which is frequently found on the oak trees near Simla. The *A. Sivalika* is met with in several of the submontane districts of the Punjab, and feeds on the *beri* tree. It is closely allied to the true *A. paphia* or *tasar* moth to which allusion has been made above. It is known in the vernacular as *bhambiri*, *tutti*, *kaunta*, or *kaintr*, and *joadri*, and is by far the most important of the indigenous *Saturniidæ*. Allusion will subsequently be made to the attempts which have been made at various times in the Punjab to turn it to economic account. The *A. Canningi* is probably useless for commercial purposes, and no use seems to be made of the *A. Cynthia*, though it is common enough in Kángra, where it feeds on the *tirimul* tree. The *C. Simla*, the *R. Zuleika* and the *S. Grotei* would seem to have no economic value at all.

(*b*).—*Mulberry feeding, or domesticated silkworms.*

5. Under this head are included the second of the two families of silkworms, namely, that known to entomologists as *Bombycidæ*. It may here be explained that the *Bombycidæ* commonly cultivated in Japan, Central Asia and Southern Europe differ from those cultivated in India, in the fact that they flourish in a temperate climate, require cold for the hatching of eggs and are *univoltine* (*i.e.* produce one crop in the course of the year), while those commonly cultivated in India are multivoltine, thrive in moist, sub-tropical climates, and do not require cold for the hatching of their eggs. The latter variety, though giving several crops in the year, of a quality not altogether inferior to the Chino-European species, nevertheless produce silk so loosely wound on the cocoon that it is difficult in reeling it off to avoid entanglement. For this reason various attempts have been made to rear in the more temperate parts of India *Bombycidæ* of the variety cultivated in Europe, China and Japan. Next to Kashmír, certain districts of the Punjab have formed the chief scene of these experiments. It is this fact which gives, for the present purpose, the chief interest to the study of mulberry feeding silkworms.

There are altogether some seventeen varieties of *Bombycidæ* found in India. Only three of these species have been found wild in the Punjab, *viz.*, *Ocinara lactea*, *O. Moorei* (both found in Kulu, but neither of any value) and the *Theophila Huttoni* found in Simla by Captain Hutton in 1837. It proved to have no practical value. Of imported worms two, the *Bombyæ Croesi*, "the hot weather Band" and the *Bombyæ mori*, the Chinese mulberry silkworm cultivated in Japan, Central Asia and Southern Europe, have been at various times domesticated in the Punjab. The former is a multivoltine silkworm originally introduced from China, of a far less valuable type than the latter, which is a univoltine species commonly accepted in Europe as yielding by far the most valuable results to systematic cultivation. It is in connection with the domestication of this variety that the most consistent efforts have been made in the Punjab. To these efforts allusion will subsequently be made.

SERICULTURE.

(*a*).—"*Wild*" *silks.*

6. The value of the produce of the "wild" silkworm has been recognized almost from the beginning of the British occupation of India, and it is not surprising to find that the history of the attempts to systematically utilize the worm in the Punjab dates from soon after the annexation. In 1858 the Financial Commissioner issued a Circular letter stating that a method had lately been discovered by which the fibre of the *tasar* * could be detached from the cocoon and adapted for the loom without unwinding it. "As a consequence certain parties in Calcutta have taken up the matter; and are anxious to obtain the cocoons of the above worm in any quantities that may be obtainable." An English merchant at Harriki was prepared to purchase them at Kálka, at Rs. 4-8-0 a maund. Writing in the same year to the Chief Commissioner, the Financial Commissioner (Sir D. Macleod) expressed his opinion that the *tasar* could "by

* By this will be understood, of course, the *Antheræa Sivalika*, not the A. *paphia*.—W. M. H.

judicious arrangements" be reared to any extent and rendered highly remunerative. The natives were, he says, entirely ignorant that silk could be produced from the cocoon "to which alone I believe it is owing, that the only use they have hitherto made of the cocoon is to cut it into strips as a binding material for the stocks of their matchlocks."

In a letter, dated 18th March 1859, he wrote as follows :—

"The Rev. Mr. Cave Brown of Sabathu is prosecuting enquiries in regard to all the varieties discoverable of *Saturnia*, a moth producing the worms, from which the *tasar* or coarser descriptions of wild silk are obtained, and as the fibre yielded by these is highly valued in the Home markets for many purposes, all the information which can be elicited in regard to these will be of public benefit. The tree upon which, in our lower hills, this insect is usually found, is the *ber* or Jujube tree. This, I need hardly observe, is most abundant in many parts of these Provinces; so that the extent to which *tasar* might be produced is probably almost unlimited, while by mixing any animal substance containing ammonia in the water in which the cocoons are boiled, it will be found that the fibre may be readily wound off, and is of excellent quality.

From endeavours made by myself to collect a considerable quantity of *tasar* cocoons, for Mr. Lotteri, a silk merchant of Calcutta, who has produced from them a very beautiful and valuable raw silk, I consider it certain that the process of collecting them in their wholly wild state would be too dilatory and expensive to be remunerative."

7. Sir Donald Macleod then goes on to suggest that worms should be hatched out from the eggs of the moth and applied to the trees, and the cocoons gathered and removed. Experiments in this direction do not, however, seem to have been made until 1884, when Mr. Coldstream, C.S., then Deputy Commissioner of Hoshiárpur, attempted to domesticate the *Antheræa Sivalika*, more or less on the above lines. In a memo. attached to Mr. Cookson's Monograph, Mr. Coldstream gives an interesting account of his experiments. He utilized the agency of zaildárs and lambardárs to collect the cocoons, which he kept in bamboo cages until they were ready to burst. This took place in June or July, at the beginning of the rains. The eggs obtained from the female moths were hatched out in open baskets, and the young worms were, when a few days old, placed out in the open on *beri* trees *(Zizyphus jujuba)*. An attempt to feed them by hand ended in failure. The *beri* seems to have proved to be excellently suited for the purpose, as after being denuded of its leaves in the rainy season, it will, in a few days, send forth an abundant crop of fresh leaves. The *Sawani* (*Lagerstræmia Indica*) was also tried, though with less success than in the case of the *beri;* experiments with other trees failed.

At the same time, it does not appear that any very complete measure of success attended Mr. Coldstream's attempts to cultivate the worm. In hardly a single instance did he manage to increase the original stock; in some cases, he even finished with fewer cocoons than he had started with. But he found no difficulty in reeling off the silk from the cocoon.

"I did not find much difficulty in having it done, and I think it was well done too. I got for the work one of the silk-rearers from the neighbouring district of Gurdaspur. He had, I think, seen *tasar* cocoons before; at least he knew how to manage them. He reeled off a clean lustrous thread of four strands, keeping four cocoons bobbing in a dish of boiling or very hot water in front of him. I do not believe he used *sajji* or anything else to dissolve the natural cement, the hot water seemed to act as a sufficient solvent."

The man worked at about the rate of 50 cocoons per diem, yielding 2½ tolas of silk. Mr. Coldstream calculated that at Rs. 10 a *sér* this would yield a return of five annas a day. It does not appear that the quality of the silk thus produced was tested by an expert; Rs. 10 per *sér* is apparently quoted as the price of the raw silk in the local market. The exact value of the silk of the *Antheræa Sivalika* for commercial purposes and its adaptability for all the uses to which the silk of the *tasar* worm proper are now put, still remains to be determined. The price quoted, however, (Rs. 10), agrees with what is recorded of the price of the raw silk of the *A. paphia*, in Bengal (Rs. 10 to Rs. 13), and in excess of that recorded for the North-West Provinces (Rs. 7 to Rs. 4). Mr. Coldstream's conclusions are expressed in the following passages :—

"Of course it entirely remains to be proved whether the silk can be produced, or the cocoons reared so as to be commercially profitable. But I do not think the establishment of *tasar* sericulture, as an industry for the sub-montane districts of North India, is to be

despaired of. Considering the very inexpensive process of rearing the cocoons, that it could be done by women and children, that the worm is indigenous to the Province, and that the attention of European manufacturers appears to have been directed to the commodity, it seems certainly possible that an industry may be developed. I think experiments should be encouraged. Natives should, if possible, be induced to take an interest in it, but this will not be probably till European skill has shown the way to a profit. The conditions of successful rearing have been approximately, but not fully, gauged. As above stated, my experiments as regards outturn in proportion to original stock, were not at all successful. Still a large number of cocoons were reared, and there is no apparent reason why, when nature has been further interrogated, the secret of preserving most of the worms should not be discovered and success achieved.

"On the whole, though I cannot say I have absolutely ascertained the conditions of success, I have seen so much in the course of my experiments, as to make me believe it possible that a kind of cottage industry of rearing *tasar*, requiring absolutely no capital, and capable of being conducted by women and children, may some day arise, if pains are taken by experiment, and the offer of rewards, to ascertain these conditions, and to introduce the industry to the notice of the natives.

The wild tribes of Central India rear the cocoons; why should not the cottagers in the Punjab hills?"

8. It is a matter for regret that Mr. Coldstream found no successor in his efforts to cultivate the *Antheræa Sivalika*. Mr. Cookson's Monograph mentions a report that Messrs. Lister of Madhopur were making experiments in this direction. But the results of these experiments do not seem to have been anywhere recorded, and in a pamphlet published in 1884 by Messrs. Lister's Manager, Mr. E. F. Keighly, and entitled "How to rear Silkworms in the Punjab," there is no allusion at all to the "wild" silkworm. Mr. Coldstream's attempts at Hoshiárpur came to an end when he left the district. "Notwithstanding the favourable climatic conditions, the enterprise of growing silk and rearing silkworms (*sic*) seem to have been abandoned. There were no Europeans left to take it up on Mr. Coldstream's transfer, and the people of the district lack the necessary energy and enterprise. The little grove of *beri* trees planted near his house to supply food for his silkworms was cut down by the owner on Mr. Coldstream's transfer" (District Report, 1899). Up to the present, it cannot be said that we have clear evidence that the Punjab can produce *tasar* silk. The problem is, in the first place, to increase the number of collected cocoons by judicious hatching out of the eggs and by "planting out" the young grubs on properly situated groves of *beri*. Unless this can be done on any considerable scale, there is *primâ facie* but small chance of success. The spinner employed by Mr. Coldstream could only earn five annas a day *when supplied with his cocoons free of charge.*

9. There is, however, another direction in which the *Antheræa Sivalika* might with advantage be exploited. One great objection, says Dr. Watt, "to the development of the Indian *tasar* silk industry is the imperfect and faulty system of Indian reeling. This fact is at once established by the published figures of the *tasar* reeled fibre, the Italian or improved fibre yielding three or four times the price of the ordinary native reeled silk" (Dictionary of Economic Products, Volume VI, Part III, page 151). The ease with which Mr. Coldstream's silk was reeled may perhaps be accepted as an indication that the *Antheræa Sivalika* would yield good results under the improved reeling process, and it would be at all events interesting to ascertain whether this were or not the fact.

(b).—Sericulture—the mulberry-fed worm.—

10. If the attempts to exploit the wild silk-worm have been somewhat meagre, the same cannot be said of the efforts made to domesticate the mulberry-fed species. There is no mulberry-fed silk-worm of any value naturally indigenous to the Punjab. Two facts have, however, encouraged the hope that the Province would prove to be the best breeding ground for imported *Bombycidæ*. In the first place, mulberries flourish freely in many districts. In the second the more favoured parts of the Province combine a temperate summer climate with a cold winter, and this fact from the first inspired a belief that the Punjab would afford unusually good opportunities for domesticating the *Bombyx mori*, the best and most valuable type of the mulberry-fed moth, which (as indicated above) demands a cold climate for the hatching of its eggs, and has, on that account, received most attention in Europe. The history of the

earlier efforts made in this direction is related in the following extracts from a letter of Mr. Cope of Hariki, written in 1858, and published in the *Journal of the Agricultural and Horticultural Society of India*:—

Ambala.—It was at the sudder station of Umballa that more than twenty years ago the first effort of an English Officer to rear the silk-worm in these Provinces was made, and there even, though by far not the most favored spot in the district in all probability, the ardent expectations of the originator would have been realized, had he been in a position to persevere. But he was called away; his experiment drooped, and finally fell to the ground, as in too many other instances similar in their nature.

So far back as 1836, Dr. Gordon, then Assistant to the Political Agent on the North-Western Frontier (Sir George, then Mr., Clerk) conceived the idea that silk might be cultivated with success and profit at Umballa. He planted mulberry trees, which still exist; he built a silk-house, which became at one time a stable, and is now the property of the American Presbyterian Mission, and with the assistance of the late lamented Colonel Goldney, one of the most distinguished victims of the rebellion in Oudh, then with his regiment (the 4th N. I.) at Berhampore, succeeded in obtaining eggs from Bengal, (he must also have secured some annual insects) and carried on his experiment for three years, notwithstanding his temporary absence in Sindh. There is a demi-official record in the office of the Commissioner of the Cis-Sutlej States, from the tone of which it appears he was very sanguine that the experiment would succeed, "and he seems to have had ground for his opinion," says Mr. Edmonstone, "in the remarkable improvement to which he alludes as having taken place in the third year. Some of the silk produced by him was sent either to Bombay or Europe, but what became of it ultimately, and what was the issue of the speculation, or the attempt rather, cannot be discovered."

Ludhiána.—The chief town of Ludhiána was, for many years, the residence of Colonel Sir Claude Wade, who exerted his utmost endeavours to promote the prosperity of the large population of the place, which, chiefly owing to these exertions, has become the fourth town in the Chief Commissionership of the Punjab.

A friend of his, Dr. Anderson, went to Ladák, in 1836, and there obtained some silk-worms' eggs, as a curiosity. On his return he presented them to Colonel Wade. The latter forthwith foresaw the advantages of introducing a silk factory at Ludhiána, secured the services of the brother of the chief gardener at Shaleemár, near Lahore, (who had some previous knowledge of the subject,) and commenced operations by forming a mulberry plantation in the vicinity of his own house.

It is known that he succeeded to the extent of obtaining some ten seers of silk, during the two years he carried on the experiment, but being called away on duty to Kábul, he of necessity, gave it up, sending, according to one account, his worms—"to a gentleman at Umballa," (Dr. Gordon, no doubt.) It is averred, by one person, that the silk wound by Colonel Wade was converted into silk stuffs at Ludhiána, while, according to another authority, it was sent to England; nothing is, therefore, known of the quality, but it is certain that the worms he reared were the annual ones, as these only are found in the Hill States.

Hoshiárpur—is nearer the Hills than Jullundur, and with the advantage, for silk-worms, of a low range running through the midst of the district, nearly along its whole length, from the Beas to the Sutluj, forming a sub-Himalayan valley to its north. Probably the luxuriance of the mulberry growth led Colonel Saunders Abbott, Deputy Commissioner, in 1852, of this highly-favored District, and till lately still there, to think of silk, in his then location, he being the first European officer in the Punjab, under the new regime, who turned his thoughts actively in that direction.* He determined on an experiment, and having obtained eggs from various quarters in the hills, commenced operations in the Jail of Hoshiárpur on a somewhat extensive scale. The quantity of eggs received was a seer and a quarter. The worms began to hatch in February, and continued to do so for some time: the first cocoon was produced on the 6th April, and the last on the 22nd May. The late cocoons were small and indifferent in quality, owing to the increasing heat; the first of a large size and good quality. Many of the eggs must have been bad, or the worms must have died in hatching, as Colonel Abbott only obtained fifty-six seers of cocoons before baking, whereas had even one-third of the eggs only miscarried, he ought to have had somewhere about ten maunds of unbaked cocoons. He set aside twenty-four seers of cocoons for seed (they yielded three seers of eggs), and from the remaining thirty-two seers he wound eight seers of coarse silk besides four seers from the pierced cocoons, and two seers of floss. The total expenses, including the necessary huts, which being flimsy, could of course not be expected to keep out the heat, were but Rs. 120, and under these circumstances, the experiment, as a first trial, must be considered to have been very satisfactory. It was repeated in the following year, but, in consequence of Colonel Abbott's departure for England, I believe, the undertaking was finally given up. It is only wonderful that it succeeded so far so well, considering the multiplicity of work a Deputy Commissioner has on his hands in the Punjab.

Kángra.—Kángra is the seat of a very large colony of Kashmírís, actively engaged in the shawl manufactures. One of these, some years ago, set up an establishment for rearing

* Major Edwardes was the first officer in the Regency time who thought of introducing the silk-worm into a new district, that of Bannu.—H. C.

silkworms, as a means of livelihood, which, however, the unsettled state of the times, and his own poverty, obliged him to discontinue, but which he is anxious to resume, if encouraged and assisted.

In *Mundee*, a semi-independent State, east of Kángra, and with all its advantages as to silk, the Vuzeer Goshain, some nine or ten years ago, introduced silk-worms, *found them thrive perfectly*, and made some silk, but having advanced Rs. 500 to the Kashmíri in charge, to get more cocoons and implements, that worthy, taking advantage of the Vuzeer's absence beyond the snows, on a political mission, decamped with the money, and has not been heard of since. So the thing, for the time, fell to the ground. The Vuzeer, however, who is the great capitalist of these Hills, is quite willing to re-establish it. The above is on the authority of Mr. Bayley, who says, in another communication on the subject, in which he took much interest:—"There is no question that silk-worms have been reared with perfect success in Mundee. The Vuzeer, however, is now too busy to attempt a repetition of the experiment."

Pathánkote,—on the verge of the Kángra District, is probably the most hopeful. In 1854, a man named Ali Bakhsh, received an advance of Rs. 150 for establishing a silk factory, and produced some fine cocoons, several of which were sent to Lahore by Mr. T. D. Forsyth, of Kángra, who says they were reared under his immediate superintendence, but whether anything further was done I am not in a position to state.

At *Soojánpoor*,—a short distance north-west of Pathánkote, and within the prospective influence of the great Bári Doáb Canal, along the banks of which tens of thousands of mulberry trees might be planted to advantage, there were, in 1852 and 1853, and may be still, certain Mussulmáns who,—"for the last eight or ten years, have raised silk-worms, and obtained silk disposing of it at Batála at the rate of Rs. 11 a seer, standard weight."

In Amritsar only one endeavour at silk cultivation has been made, and that at Majeeteea, the hereditary residence of the Majeeteea family. It was originated by Sirdár Desa Singh, the father of the chief, Lena Singh, who was distinguished as the only man who studied the arts of peace in the warlike court of Runjeet Singh. Desa Singh obtained the eggs from Cabul and manufactured some coarse silk valued at from Rs. 7 to Rs. 8 a seer. He seems to have undertaken the experiment more as a matter of speculative curiosity than to promote the cultivation, and to have allowed it to drop as soon as his curiosity was satisfied.

Lahore.—The subject of silk cultivation, and the advantages that would result from its introduction into the Punjab, originally connected with the notion of supplying local manufactures, was brought before the local Society in 1852, was actively taken up by the members, and subsequently most liberally supported by the local Government and by the Governor-General.

It was not then known, to those who carried on the experiment, that annual worms were procurable so much nearer the scene of operations, and they consequently and necessarily turned their attention to Bengal. A small supply of eggs was obtained in 1853, through the good offices of Colonel McGregor, then Resident at Moorshedabad, and succeeded so well in the early part of the season, as to the produce in cocoons, that great hopes of success were entertained. Successive crops were reared, though they deteriorated as the season advanced, and it became, in consequence, requisite to arrange for a fresh and larger supply of eggs from Bengal. It also soon became known that eggs could be purchased in Kashmír, and a man was deputed to secure a quantity. A breeding-house was built in the garden, application for pecuniary assistance was made to the Government, and responded to in a spirit of great liberality, measures were taken for obtaining the services of an efficient Superintendent, who was selected by Colonel McGregor, and sent up, with a set of reelers, from the silk districts of Bengal, and the necessary appliances for winding. On the arrival of Mr. DeVerinne, a filature was established in an empty public building, and six basins constructed. The produce in cocoons was not so large as had been hoped for, with the very considerable supply of eggs secured, and it became very evident that the Bengal monthly worm would not thrive, while the insect reared from the Kashmír eggs certainly gave the most decided proofs of success in the large cocoons those worms yielded, that were hatched in the early part of the season, and were adequately fed, a matter of no small difficulty, especially in the last year of the experiment, 1856, when the number of worms became so large, as to render it next to impossible, even to the over-worked zeal of Mr. Appelby, the Society's gardener, to secure leaves sufficiently fresh and at all times of the day. The quality of the silk wound, amounting in all to about five maunds and a half, was pronounced, by competent judges, of a very superior quality, but the return it gave was altogether inadequate to the total outlay, exceeding Rs. 11,000. Had the quantity of eggs procured been distributed in small parcels over the country, and the cocoons gathered for consumption at the Lahore silk filature it is probable the outturn would have been much larger, and perhaps even profitable.

Ráwalpindi,—where a small but continuous and successful factory has been kept up for years past, and at a village named Saiudpoor, situate at the base of the Hazára Hills, from a small supply of worms originally brought from Kandahar, and of which factory, Mr. W. R. Carnac gives the following interesting account:—

"Should the Saiudpoor silk"—specimens accompanied Mr. Carnac's letter—"prove equally valuable in the market, with that of the countries above mentioned, the success of

silk manufactories, if introduced extensively into the northern portion of the Punjab, will be placed, I conclude, beyond a doubt. There is nothing peculiar in the situation of Saiudpoor. It belongs to Mirza Shahwullee, a descendant of the Gakkurs, whose ancestors, in their palmy days, planted an extensive mulberry garden of one thousand, five hundred or two thousand trees, the greater portion of which were destroyed by the Sikh army in 1848-49, owing to the Mirza's staunch fidelity to the British cause. With the produce of the remainder, he has started a small silk manufactory which yields him five to six seers (Lahore weight) annually, which he sells at Peshâwur for Rs. 18 or Rs. 20 the seer. He states that many of the trees were imported from Kandahár. There is no reason, whatever, that similar manufactories, to any extent, should not be equally successful in the numberless villages along the base of the range (possessing equal advantages with Saiudpoor in the way of irrigation from hill streams), commencing below Ghâzi on the Indus, and extending below Gundghur and Khanpoor to Gungallee on the Jhelum."

Peshâwar.—The silk-worm was never bred at Peshâwur to any extent, and, even before the Sikh rule the greatest quantity produced in a year, was four maunds, and this of a very inferior quality.* The fact is, that the mulberry must be cultivated for this purpose only, and must be in extensive plantations, for, after five or six years' growth, the leaves are not considered fit for use, and if given to the worms the silk is found to be coarse.† I am told that a favourite mode of growing it in Balkh and Bokhára, is growing it from seed; this is rubbed from the hand into the coils of a rope, which is laid in the earth in rows like sugarcane, and grows to a height of four or five feet, when it is cut for use, and the ground sown with grain for two years, when it is again fit for mulberry. In other places, plantations of young trees are kept up so about five years, when they are cut down and removed. Such cultivations would not be found remunerative to the owners of the rich orchards about Peshâwur, or even to the cultivators of the district. Before the Sikhs cut down the trees, the mulberry was only found in the orchards and in the neighbourhood of villages, where the value of their fruit and shade was too great to admit of their being despoiled by the silk-workmen of Peshawar. None of these men seem to think that the production of silk in their country can be greatly increased; the worm is now only kept as a curiosity.

11. The sketch given by Mr. Cope of the efforts made to cultivate the worm in Lahore may be supplemented by the following details. The Lahore Agri-Horticultural Society first took up the subject in 1852, and as the silk then produced from Bengal worms (probable the *Bombyx Croesi* or 'hot weather *Band*' supposed to have been originally introduced from China) was favourably reported on by the Calcutta Society, the Chief Commissioner, Sir John Lawrence, was in 1854 approached on the subject of a Government grant. In 1855 Sir J. Lawrence, who had consulted the Government of India on the subject, sanctioned a grant of Rs. 17,000 "on the distinct understanding that no further assistance would be given by Government." The Bengal worms, however, in spite of the efforts made to cultivate them, produced only about 94 pounds of silk against the 800 pounds which had been expected. The Chief Commissioner, therefore, at the beginning of 1856 directed the Society to "deliberate on the further continuance of the experiment," and it was then decided to try Kashmír worms—no doubt the *Bombyx mori*, which has for many centuries been domesticated in Kashmír, and which was, according to the writers whose conjectures on the subject have most weight, probably introduced to that country from China. The Kashmír worms began with as much promise as had those imported from Bengal; but in their case also the result was disappointing, and the total yield was only 79¾ pounds of clean silk. The quality was, however, excellent, and a local supporter of the Society, undeterred by the woeful shortage in supply, could still write as follows:—

"Most satisfactory and encouraging, as a last and crowning fact, I have the gratification to state that the silk produced at Lahore in 1856, admitted to be inferior to that of 1855, and taken to England for sale, realized there the high price of twenty shillings a pound, equal to twenty rupees a seer, and that in a year when Bengal silk was confessedly at a discount in Europe. What more can I say on behalf of silk cultivation in the Punjab?"

12. The total sum expended was Rs. 10,569-9-8, and the receipts amounted to an estimated Rs. 1,100. The conclusion of the Chief Commissioner is expressed in a letter No. 502, dated 16th July 1856:—

"The conclusion, therefore, I am to state, appears to be, that the climate in this part of the Punjab is inimical to the production of raw silk. For this purpose an equable temperature, and a tolerable moist atmosphere, are required. But in the spring, which is the season

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* See, however, for evidence to the contrary Edwardes' "Year or the Punjab Frontier," Vol. I, page 236.—W. M. H.

† This is a great mistake. The harder the leaf, if healthy, the better the silk, but, of course, such leaves must only be given to the full grown worm; when young with soft teeth, he must be treated more tenderly. The *Morus Multicaulis* has failed in affording the results so sanguinely expected, partly because it produces so few leaves, though they are larger, and partly because those few are too soft and milky for the worm, yielding a weak fibre.—H. C.

for silk spinning, the weather is at first comparatively mild. So long as that lasts, the worms thrive on rich green fodder; and spin fair cocoons—but in about the middle of April, the weather rapidly changes for the worse; and the worms are ruined. For the northern parts of the Punjab, which are sub-montane, that is, within influence of the Himalayas, different climatic conditions exist. There the atmosphere may retain its humidity and coolness longer than in the Southern districts; and there the production of silk in quantities may be possible. Private experiments have been conducted occasionally in some of these places, with a certain measure of success. But there are neither the means nor the agency for such experiments on the part of Government available in these quarters. But in the central districts of the Punjab, a few pounds of marketable raw silk might be produced as samples; but no considerable quantities can be raised."

(Hoshiárpur, Kángra, Núrpur, Dínánagar, Núrot, Bijwát, Ráwalpindi, Hazára.)

13. The Financial Commissioner (Sir D. McLeod) did not agree that the case was altogether hopeless, and in his letter No. 508, dated 29th September 1858, offered his help to any one who would engage in the undertaking. For some years, however, the only person who attempted anything like scientific culture was Mr. Cope of Hariki, to whom allusion has already been made. This gentleman experimented with the Kashmir *Bombyx mori* at Amritsar in 1859, and produced a small quantity of silk that in colour, gloss and weight, was said to be superior to anything produced by the Bengal annual. It was valued at 22 to 23 shillings a pound. Next year (1860) he experimented with the acclimatized eggs left over from the previous year, and also with eggs obtained from Bokhára and a fresh supply from Kashmír. In spite of various misfortunes, he obtained a certain quantity of silk which was "greatly admired and again valued above Bengal." Some of it was actually sold in England for 25 shillings a pound. He received a grant of 100 acres of land near Amritsar in acknowledgment of his efforts. He was now experimenting in the various kinds of mulberry, finding the common standard tree (*morus alba*) to be unsuited to his purpose, as it produced great quantities of fruit, which had to be removed at some expense. The Royal mulberry of Kashmír (*shahtút*) was more suitable, but its fruit is too highly prized to be sacrificed for the leaves. The Philippine mulberry (*morus multicaulis*), which had been strongly recommended to sericulturists by Colonel Sykes many years before, and had been introduced into the Punjab in 1856, was found to be best suited in every way for the purpose. The Chinese mulberry (*morus sinensis*), which was introduced into the Punjab at the same time as the Philippine variety, he believed to be less useful.

14. At about the same time several of the Kángra tea planters began to make experiments, and the overseer of the Government tea plantation at Holta, who had at his disposal a quantity of Philippine and Chinese mulberry, managed to produce a fair quantity of silk. Mr. Cope again approached Government on the subject of a grant, and, with the support of the Financial Commissioner, secured an allowance of Rs. 2,000 in 1862. At the same time a *bonus* of Rs. 500 was given to Jaffir Ali, of Debria,* Gurdáspur, to whom allusion will afterwards be made, as a reward for his efforts to produce silk. Mr. Cope's experiment with the Government money in 1863 turned out a total failure. Next year he continued his experiments at his own expense, and entrusted a large quantity of Kashmír eggs to Jaffir Ali, who raised for him "a magnificent crop" of from 8 to 10 maunds of cocoons. Jaffir Ali's experiments deserve mention, since they afford almost the only example of continued success in this direction. The Deputy Commissioner of Gurdáspur reported in 1863 that Jaffir Ali had been cultivating silk-worms and reeling silk for 20 years. He procured his eggs originally from Pesháwar, and kept his worms in "two old pals, and five or six low and ill-ventilated sheds. He laughed at elaborate sanitary arrangements, and said it would never do for any one but amateurs to adopt them." He sold his silk for Rs. 15-8-0 a seer—a better price "than can be obtained in Pesháwar for the common Kokan, Bokhára, and Khulm silk, and within a few annas of the value of that called *lab-i-abee*, which is raised on the banks of the Oxus." Jaffir Ali was admitted to have made something like a fortune from the business, in spite of the fact that he had no mulberry trees of his own, and was "at the mercy of the villagers, who unconscionably raised the price of leaves."

15. At this time, too, (1863) an experiment was made at Pesháwar under the direction of the Deputy Commissioner, with Jellalabád, Bokharan,

* Durreah Pattun.

and "acclimatized" eggs (obtained from Jaffir Ali). Only the Jellalabád eggs yielded any result; but these, in spite of various misfortunes, including "the presence of evil spirits and unclean persons," yielded a fair quantity of marketable silk. This incited the principal members of the commercial community to form a company to pursue the experiment. A difficulty was at first experienced in obtaining silk rearers, but the Deputy Commissioner sent an "invitation" to certain families to emigrate from Kajja near Jellalabád, and these afforded the necessary subordinate agency. The Punjab Government in 1864 sanctioned Rs. 550 in prizes and rewards to those engaged in the 1863 experiment, and placed Rs. 500 at the disposal of the Deputy Commissioner for the year 1864. In spite of the departure of that gentleman for England before the operations of the year were concluded, the company realized a profit of 42 per cent. on their outlay. Nevertheless, it dissolved, and nothing more seems to have been done in the district.

16. During the continuance of the experiments at Pesháwar, efforts were also being made to cultivate the silk-worm at Gugera (Montgomery) and Shahpur. The Deputy Commissioner of Gugera reported that an expert had pronounced his cocoons "remarkably fine;" that he had 600 mulberry trees available, and had planted a road with more. The Civil Surgeon, who conducted the experiment at Shahpur, found the absence of mulberry trees from the station to be a serious obstacle, but succeeded in producing eight seers of silk, which he sold for Rs. 117. The cost (including purchase of reeling machines) was Rs. 96-8-0. So far, with the single exception of Jaffir Ali, no one seems to have made much of a success of silk-worm culture. Still a considerable demand existed for the raw materials (the manufacture in the Punjab at this time amounted to about 13½ lakhs) and attempts to produce it locally were not altogether abandoned. Lieutenant Powlett attempted in 1865 to encourage cultivation at Gujránwála, but with only partial success, as few mulberry trees existed in the station. In the same year Mr. Montgomery, of Kángra, began a trial with Kashmír eggs, but the worm would not thrive on the indigenous mulberry, and he procured plants of the Chinese and Philippine varieties from Lahore. The Silk Supply Association of London reported very favourably on some cocoons submitted by him in 1870, and, thus encouraged, he imported a supply of eggs from Europe. In 1872 some of the cocoons resulting were forwarded to the Government of India, and a favourable report obtained from an expert to whom they were submitted. With the exception of an experiment made in 1872 at Amritsar, by Mr. F. Halsey and Chevalier O. de Cortanze, to grow silkworms on mulberry leaves obtained from the old Hasli Canal—the object being to export the eggs to Italy—the subsequent efforts to promote silk-worm cultivation in the Punjab have been confined to the Kángra and Gurdáspur Districts. In the latter, native cultivators had for some time been increasing in numbers, and in 1873 there were at least fifty families occupied in the trade. Jaffir Ali continued his operations and was anxious to extend them, but it was found that he and other native growers habitually endeavoured to rear a much larger number of worms than they could either house or feed. The result was, of course, deterioration in quality. With a view to encourage growers to look more to the quality of their stock, the Local Government, acting on the suggestion of Mr. F. Halsey, sanctioned the grant of Rs. 1,000 in prizes from the Gurdáspur District Funds for the best cocoons of local production. From this originated a series of annual exhibitions, the first of which was held at Gurdáspur in 1876. There were 98 exhibitors. Government considered the experiment an interesting one, and agreed that it should be continued. At the same time rules were issued granting a release of revenue on lands planted with Chinese mulberry. This variety had proved more valuable than Mr. Cope's experiments had at first indicated. It comes into leaf three weeks before the standard mulberry, and thus provides the young worm with the requisite nourishment at a critical time. The exhibitors in 1877 numbered 164 and the quality of the exhibits was much improved. In the exhibition of 1878 a further improvement was noted, the first prizes being obtained by produce from Italian eggs. It was also said that the plantation of Chinese mulberry had been greatly extended.

17. Exhibitions on the lines of those held in Gurdáspur were also held in Kángra in 1877 and 1878. The show of cocoons obtained at those two Exhibitions were, however, inferior to those obtained at Gurdáspur, where the rearers had

been longer at work. At both Exhibitions the cocoons produced were of very fair quality, but the silk had been reeled off in so rough a manner as to be pronounced of a very inferior grade. The result of the Kángra Exhibitions was held to indicate that there were great possibilities in the district. The Kashmír colony of Núrpur, which had lately been reduced to straightened circumstances owing to the decline in their shawl trade, were said to be turning to silk culture as a means of relief.

The Report of the Exhibition of 1878 says—

"The pargana of Núrpur is far better adapted by nature for the purposes of sericulture than the greater part of the Gurdáspur district. There are many tracts of land unfit for cultivation from irregularity of feature and other causes, in which, however, the mulberry would grow, and there is no doubt whatever that the whole of the land revenue of the pargana could be paid from proceeds of the cocoon crop if only the zemíndárs could be made to see the advantages to be gained. To a zemíndár there is no cash outlay whatever in producing cocoons; he has his sheds already; he has his ploughmen to do the work of bringing in the mulberry leaf, at a season of the year when they are comparatively unemployed; for it must be remembered that the cocoon of the annual silk-worm is ready about ten days before the barley harvest commences; he has the members of his family who can tend his worms, and finally he can have plenty of mulberry leaf without paying for it. The pursuit of silk-worm rearing is carried out by agriculturists only in other countries where it is a staple.

"But to make this enterprise a success the people must take to it in a business-like way. They must rear a small quantity of worms such as comes within their means; that is, they must attend to quality and not quantity. An old woman and her son can tend the worms produced from half a chattak of eggs, which, if properly looked after, will produce a maund of live cocoons worth Rs. 30 to Rs. 40, quite sufficient to keep them during the remainder of the year, and this in 40 days with no cash outlay whatever."

18. No Exhibition was held in Gurdáspur in 1879, but one was held (the third of the series) at Kángra. No less than 79 maunds of cocoons were produced, and about Rs. 500 distributed in prizes among 300 competitors. Though no exhibition was held in Gurdáspur, about Rs. 10,000 worth of cocoons were reported to have been purchased by an Amritsar firm during the year. The year 1879 was marked by the death of Mr. F. Halsey, who had been the chief mover in the Gurdáspur and Kángra Exhibitions and had himself started a silk filature at Sujánpur. He had also given a large number of prizes at the Exhibitions, and had further encouraged the cause of silk culture by large donations of young plants of the Chinese mulberry. His filature was bought for £ 600 by an agent sent out by Messrs. Lister and Co., Silk Spinners of Manningham, Yorkshire, who announced their intention of attempting silk culture on a large scale in the Kángra District. The firm was, after some negotiation, given a lease of the mulberry trees on the Gurdáspur-Amritsar Road, and the Local Government at the same time instructed District Officers to encourage the formation of plantations of Chinese mulberry. It also invited the attention of the Forest Department to the matter. The Government of India conveyed its approval of these proceedings in February 1880.

19. Exhibitions were held in Gurdáspur and Kángra in 1880. At the former Rs. 960 were distributed in prizes and at the latter Rs. 1,250. The number of competitors in Gurdáspur showed an increase, but at Kángra there was a large falling off, both in the number of competitors and the weight of cocoons exhibited. The latter fact is said to have been due to the eggs having been destroyed by a sudden change of weather. In the following year (1881) the Exhibitions were amalgamated into one held at Mádhopur. There were 447 exhibitors, who produced no less than 251 maunds of cocoons. The majority of these were grown from foreign seed distributed by Messrs. Lister's agents; an expert present declared these "to be equal to any he had ever seen." The Deputy Commissioner, in his report to Government, estimated the year's outturn of the two districts in silk at 80½ maunds. In the 1882 Exhibition (Mádhopur) the exhibitors had increased to 720 and the weight of cocoons to 276 maunds. Rs. 1,659 were distributed as prizes, which (as usual) fell mainly to the professional rearers. *Zamíndárs* proper only produced 65 out of the 276 maunds of cocoons. It would seem that disease had, during the years 1880-1882 been spreading among both the indigenous and foreign worms, and the quality of silk was in 1882 seriously affected by it.

20. Up to this date, the results of the Gurdáspur and Kángra Exhibitions had been far from discouraging. They had apparently induced existing rearers to increase the quantity and quality of their stocks; and in addition to this a large number of persons now began for the first time to take up the trade. There seemed every probability that a new and highly profitable industry had been established in these two districts. These hopes, however, were never realized. Soon after the date of the last Exhibition noticed above, disease, which was probably due to overcrowding and want of care, broke out among the worms, and the output was seriously diminished. In 1883, Captain Bartlett, who had started a small filature at Pumar in the Palámpur Tahsil of Kángra, died, and at his death a good deal of the cultivation which had been undertaken at his instigation by planters and others in the Kángra Valley, came to an end. In spite of the increase of disease, exhibitions were held each year at Pathánkot and Núrpur till 1886. In this year the number of exhibitions had fallen to 371 in Pathánkot and 181 at Núrpur. The exhibition at the latter place was therefore discontinued, and a joint exhibition henceforth held at Pathánkot. This continued with varying, but in no case successful results, until 1890, when the total number of exhibitions numbered only 169. The exhibition was therefore discontinued. Previous to this the supply of cocoons had become so short that Messrs. Lister in 1886 removed their filature to the Dún, where they had started silk-worm cultivation on a large scale. The firm had begun its operations in the Punjab on the same lines as Mr. Halsey, whom, as stated above, they succeeded. Mr. Halsey gave the rearers seed, encouraged them by offering prizes for the best cocoons, secured for them trees belonging to Government along the side of roads and canals, made small advances of money to them, and bought their cocoons at a reasonable price for reeling in his own filature. At first Messrs. Lister adopted the same principle. After a time, however, finding that the supply of cocoons showed no considerable increase from year to year, and that *pebrine* had become general among the worms, they started cultivation on their own account. They built rearing houses at Gurdáspur, Gulpur, and Sujánpur, and sent the cocoons to be reeled at their filature in Dehra Dún. Mr. Lister gave his reasons as follows:—

"The whole art and mystery may be expressed and enforced in three or four simple rules. *First* sound seed; *second*, air, space and cleanliness; *third*, regular feeding; *fourth*, suitable rearing houses. And where do you find these conditions in the native cottage?..... ..All the wealth of India could never make silk-worms thrive in the hands of dirty, careless, ignorant native rearers. I have paid for my learning, as for many years I joined Government in giving prizes; but I soon saw it was perfect waste of time and money. Then it was that I determined to try what could be done by having everything carried out in a proper business-like manner."

21. In 1890 the events described above had had so discouraging an effect on the native rearers of the Gurdáspur and Kángra Districts that the Deputy Commissioner of the latter district could speak of the industry as "moribund," and Mr. N. G Mukerji (an expert who was reporting on the silk-rearing industry for the Government of India) found that the total number of growers in both districts did not now exceed 600. He believed, however, that Messrs. Lister were at length about to score a success by their new methods, as they had imported Smyrna seed selected by Pasteur's system in order to secure themselves against any chance of *pebrine* spreading to their worms. He also believed that the decline among the native growers was merely temporary. "The decay," he says, "is a temporary one only, and the industry is destined to revive shortly. The industry having been taken up by the people, it is bound to spread when once they get healthy seed." In neither case was his prognostication correct. Messrs. Lister, after further heavy losses, closed their Gurdáspur rearing houses in 1892 and retired altogether to the Dún. The village industry never revived and is now (1898-99) said to be practically non-existent in Kángra, while the Gurdáspur growers, in spite of a slight recrudescence of the industry during the last two years among the Pathán and Gujars in the Shakargarh Tahsil, are now said to have for the most part abandoned silk cultivation for other trades.

22. One other attempt to encourage the growth of silk, and one only, remains to be recorded. In 1884 the Forest Department, finding that mulberry trees were growing freely in the new Government plantations at Chánga

Mánga (Chunián Tahsil, Lahore District), commenced the experiment of rearing silk-worms from Japan seed. In the first two years their efforts were apparently successful; cocoons were produced in fair numbers and won prizes at the Núrpur and Pathánkot Exhibitions. But in 1886 about 75 per cent. of the worms suddenly died off owing, it is said, to the intense heat, and the experiment was not renewed. The expenditure during the three years was Rs. 2,951 and the receipts Rs. 871, a deficit of Rs. 2,080.

23. This ends the history of the attempts on the part of Government or of capitalists to domesticate the *Bombyx* in the Punjab. The experiments have always held out fair promise of success at starting; they have always ended more or less disastrously. Yet it cannot be said that they have definitely proved the Punjab to be entirely unfitted as a rearing ground for the moth. Practically, it may be said that there are two methods open to the capitalist. The first is that alluded to above as Mr. Halsey's method, which may be described as fostering a cottage industry. The second is Messrs. Lister's method of cultivating the worm in central rearing houses under skilled supervision. It should be remarked that Messrs. Lister's efforts were directed almost entirely to the cultivation of the *Bombyx mori*. Their failure does not prove that the "cottage" method would not prove a success in dealing with the multivoltine species, which is cultivated, and successfully cultivated, in Bengal and Kashmír. The multivoltine species is hardier, and far less exacting, as Jaffir Ali found, in the way of sanitary requirements, and it is possible that in this case Mr. Lister's strictures on native methods would lose their force. But it is certain that cultivation, whether of the multivoltine or univoltine species, will never become popular among natives without considerable encouragement *ab extra*.

The exact amount of silk rearing now carried on in the Punjab is very small. The Census Report of 1891 does not give the numbers of silk growers. The reports received from District Officers during the present year (1898-99) show that there are now only two districts, Kohát and Gurdáspur, in which the moth is cultivated at all. The Deputy Commissioner, Kohát, states that about 20 men cultivate silk-worms at Dallan, a village situate at the western end of the Darrah Valley (Teri Tahsil) on the Wazíri border. They obtain their eggs from the Kurram Valley. The facts relating to Gurdáspur have already been given in a previous paragraph. It should be added that at present the chief place of cultivation in Gurdáspur is Behrámpur.

Manufacture.

(*a*).—*Extent.*

24. While sericulture therefore cannot be said to exist as an industry in the Punjab, there is, on the other hand a manufacture of some importance carried on in the Province. It was calculated by Mr. Cope in 1851 that about 229 maunds of raw silk were used in Lahore, the value of the articles manufactured being estimated at 2 lakhs of rupees. The industry employed 935 persons. The local manufacture at Amritsar at the same date employed 2,205 persons and the value of goods produced was estimated at 3½ to 4 lakhs of rupees. Mooltan produced silk goods of the value of about a lakh; and a considerable manufacture was also carried on at Jullundur. The chief sources of import were said to be "Kokand, Bokhára, Balkh, Khulm, Akcha, Shibbergaum, Andhho, Kashmír, Bengal and China *viâ* Bombay." Altogether it was estimated that in 1852 the import for purposes of manufacture *and re-export* amounted to 7,248,024 lbs., of which 2,466,605 lbs. came from China, 1,335,951 lbs. from Bengal, and 3,445,488 lbs. from other parts. In 1868-69 the total *manufacture* of the Punjab was estimated at 13½ lakhs, in 1870 at 18½ lakhs; very nearly the whole of this being produced from imported silk. It is, however, probable that this estimate (which is taken from the Provincial Administration Reports of the years mentioned) was not based on the most reliable grounds. At all events, in 1884, Mr. Cookson, as the result of the special enquiries made for the purposes of the Monograph, calculated that "the total annual value of the silk goods manufactured in the Province, including pure silk goods and mixtures of silk and cotton, such as *lungis*, *súsi*, *dopattás*, *iláchas*, &c., is probably somewhere about 25 to 30 lakhs of rupees."

25. More accurate figures of the consumption of raw silk for manufacturing purposes are available from 1888-89 onwards. The combined figures of the External and Internal Land Trade Reports give the following results for 1888-89 :—

Import of Raw Silk.	lbs.	*Export of Raw Silk.*	lbs.
By trans-Frontier routes ...	10,192	By trans-Frontier routes,	336
By Rail and River—		By Rail and River—	
(*a*) Foreign	357,307	(*a*) Foreign	14,850
(*b*) Indian	111,127	(*b*) Indian	660
	478,626		15,846

This gives a net total of 462,780 lbs. consumed in the Province. From 1889-90 onwards the consumption of raw silk, calculated on the same basis, has been—

	lbs.
1889-90	474,080
1890-91	428,320
1891-92	563,280
1892-93	422,320
1893-94	482,720
1894-95	461,760
1895-96	571,520
1896-97	570,480
1897-98	546,840
1898-99	591,520

The detailed figures for the year 1898-99 will show both the source of the raw material used and its estimated value. It will be noted that these figures do not give the import by road, except where the article enters the Punjab from trans-frontier districts. Even in that case it is by no means certain that the whole, or even the greater part of the import, is registered.

Imports of Raw Silk.		lbs.	Rs.	*Exports of Raw Silk.*		lbs.	Rs.
By trans-Frontier routes.	1. Kábul ...	1,120	6,440	By trans-Frontier Routes.	1. Kábul ...	1,520	6,819
	2. Kashmír...	4,080	23,800		2. Kashmír...	640	3,500
	3. Ladákh ...	160	500			2,160	10,319
		5,360	30,740				
By Rail and River.	(*a*.) *Foreign Silk.*			By Rail and River	(*a*.) *Foreign Silk.*		
	Bombay ...	495,280	17,83,008		Bengal ...	80	479
	Karáchi ...	17,440	86,546				
	Calcutta ...	720	3,937				
		513,440	18,73,491				
Ditto	(*b*.) *Indian Silk.*			Ditto	(*b*.) *Indian Silk.*		
	Bengal ...	6,720	42,756		Madras ...	80	245
	North-Western Provinces.	4,160	20,800		Bombay ...	160	491
					Sind ...	80	245
	Rájpútána ...	80	245		North-Western Provinces.	1,440	4,419
	Bombay ...	22,480	94,800		Rájpútána ...	160	491
	Karáchi ...	3,680	17,034		Bombay ...	640	1,964
	Calcutta ...	49,520	...		Calcutta ...	7,120	21,849
		84,640	4,90,700			9,680	29,704
	Total Import ...	603,440	23,94,937		Total Export ...	11,920	40,502
Balance of Import over Export ...		591,520	23,54,435				

26. While the net import of raw silk has increased during the last ten years, it is noticeable that the imports from Bokhára and Kábul have largely fallen off. This is, no doubt, mainly due to the high export duties imposed by the Amír, and is part of the general decline in the trade of Afghánistán with British India. The Pesháwar District Report, 1898-99, calculates that, omitting any dues Bokhára silk may pay on its way to Kábul, it pays Rs. 94-7-6 per camel load (say 5 maunds) in transit dues alone on its way from Kabul to Pesháwar. It is possible that the small increase in imports *viâ* Ladákh observable in recent years may be due to the fact that the Central Asian silk now reaches India in preference by the Karakoram route, and no doubt a certain part of the Bokhára silk also reaches India by the Persian Gulf and Bombay. But these remarks

do not by any means exhaust all the facts of the case. The decline in imports from Bokhára and Kábul has been accompanied by a decline in the import of Indian raw silk from Bengal. The Punjab manufacturer has no doubt begun to appreciate the fact that the China and Japan silk imported from Bombay takes colour far better, and is easier to work, than either the Central Asian or the Bengal variety.

27. Next to Burma, the Punjab was in 1891 the Province which used the largest quantity of raw silk for the purpose of manufacture. Since that date, however, the relative position of the Punjab would seem to have declined owing to the competition of the Bombay and Calcutta mills. At the same time it is obvious that the quantity of raw silk used in the Province has shown of recent years a tendency to increase rather than decrease, and it is not possible to endorse the opinion expressed in the majority of the District Reports that the manufacturing industry is rapidly declining owing to European competition. The net import of the raw material is, as shown above, very nearly 6 lakhs of pounds. The provincial valuation of Indian silk piece-goods is given in the Internal Trade Report at about Rs. 7 per lb. On this showing the total value of the manufactured product should be at least 40 lakhs.

It would not, however, appear that the Punjab manufactures sufficient for export as well as for provincial needs. As a matter of fact, the figures are all the other way. In 1898-99 the case stood as follows :—

SILK MANUFACTURES, INDIAN. *Imports.*

			lbs.	Rs.
By trans-Frontier routes.	*Nil.*			
	Nil.			
By Rail and River	Bengal	...	58,080	7,08,576
	N.-W.-P.	...	1,040	8,710
	Rájpútána	...	160	1,126
	Bombay	...	60,160	5,02,759
	Karáchi	...	3,040	25,405
	Calcutta	...	18,720	2,28,384
Total Import		...	141,200	14,74,960

SILK MANUFACTURES, INDIAN. *Exports.*

			lbs.	Rs.
By trans-Frontier routes.	Kábul	...	960	4,091
	Kashmír	...	5,120	16,280
	Ladákh	...	160	3,200
By Rail and River	Sind	...	4,480	31,528
	N.-W.-P.	...	2,400	16,890
	Rájpútána	...	720	5,067
	Nizám's territory.		400	2,815
	Madras	...	80	563
	Bombay	...	160	1,126
	Karáchi	...	160	1,126
Total Export		...	14,640	82,686

The balance of import over exports is therefore 126,560 lbs., valued at Rs. 13,92,274.

(b).—Classes of silk imported for manufacture.

28. Silk in its raw state is known as *kachha pat*, *jatam* and *korah*. A considerable number of names are given in the District Reports of 1885 and 1899 as applied locally to the various classes of raw imported silk. Some of these names, however, refer merely to the source from which the silk has been imported. Some refer to its quality, and some again refer only to its adaptability for use in the various processes of weaving. Imported silk seems to be distinguished in the first place by a name denoting its county of origin. *Vardanzai* silk, for instance, is that produced in North-Western Bokhara; *purbi* is silk coming from Bengal or Calcutta; *akhcha* and *kokháni* come from Central Asia. Silk imported from Bombay seems sometimes to be called *ríl*. The various grades of imported silk are somewhat difficult to classify, but a comparison of the information derived from various sources yields the following list :—

1. *Wardán.*—A name applied to the best Central Asian Silk. See specimen 1. It sells for Rs. 18 per seer at Pesháwar, Rs. 17 at Multán. The price at Amritsar is Rs. 18 for the best Bokhára variety, Rs. 17 for *khuiandi* and *arganzi*, Rs. 15 for *kokáni*, Rs. 12 for *nargalani*. It is generally used for the *táni* or warp, and is sometimes itself called *táni*.

2. *Mai*, *Mayee* or *Phul.*—A name chiefly given to China silk imported from Bombay *viâ* Amritsar. The bétter quality sells for Rs. 17 at Peshawar; a second quality sells for Rs. 11 in Amritsar, Rs. 12 or Rs. 13 in Pesháwar, Rs. 11 in Multan and Rs. 12-8-0 in Kohát, whence it is exported to Independent territory for embroidery on *kurtas*, caps, &c. See specimen 2.

3. *Akhcha.*—From Balkh. Sells for Rs. 15 per seer at Peshawar. See specimen 3.

4. *Attyan.*—A China silk imported from Bombay; sells for Rs. 15 a seer at Pesháwar. See specimen 4.

5. *Nawábi.*—From Bokhara. Used for the weft in weaving and for embroidery work. Sells for Rs. 12-8-0 a seer in Kohát and Rs. 14 at Pesháwar. This silk would also seem to be that known as *chilla jaidar, imámi, kundúzi, túni* and *shálbáfi.* The *kokáni* variety is sold at Amritsar for Rs. 14 (*Báf kokani*), the *Bokhari* and *khujandi* for Rs. 14, the *sandvála* for Rs. 9. See specimen 5.

6. *Lab-i-abi.*—Produced in the country bordering on the Oxus, and in Samarkand. Sells for Rs. 14 a seer in Pesháwar. See specimen 6.

7. *Shahr-i-sabzi.*—A Samarkand silk, imported *viá* the Khyber. See specimen 7,

8. *Waran.*—A Bengal silk. Sells for Rs. 13 a seer at Peshawar and at Amritsar for Rs. 13 downwards according to quality. Used in embroidering *phúlkáris* and also by *Pataulis* for stringing jewels. See specimen 8.

9. *Namkáni.*—A Central Asian silk. Sells for Rs. 13 per seer at Pesháwar. See specimen 9.

10. *Charkhi.*—A Bokháran variety. Sells for Rs. 11 per seer in Kohát, Rs. 12 in Pesháwar. Used in the margins of *lungís* and in making *salari* and *mothra* cloths. See specimen 10.

11. *Ghungru.*—A Bengal silk. Sells for Rs. 11 a seer in Pesháwar, Rs. 8 in Amritsar, Rs. 9 in Kohát, but price depends on quality. Imported to Amritsar from Rámpur. See specimen 11. Used in *phulkáris* and other *kashída* work.

12. *Báf Kandahári* and *Báf Yárkandi.*—These sell at Amritsar at Rs. 12 and Rs. 12-8-0 per seer.

13. *Kakra.*—A Hong Kong silk. Sold at Amritsar at Rs. 11 a seer.

14. *Sultáni.*—A Hong Kong silk. Sold at Amritsar at Rs. 11 a seer.

15. *Behrámpuri.*—Produced in the Gurdáspur District. The outturn is said to be about 2 or 3 maunds per annum. The silk sells at Rs. 13 per seer at Amritsar and is chiefly used by *Pataulis.*

16. *Dukhi.*—A Bokhara silk used in embroidery. Sold at Peshawar at Rs. 11 a seer. See specimen 12.

17. *Kattai.*—A China silk imported *via* Bombay. See specimen 13.

18. *Dutára, Ektára, Láni Maktúl, Kattar.*—Bengal silks imported from Balli and selling at Amritsar from Rs. 7 to Rs. 9 a seer.

19. *Manchu.*—A Hong Kong silk. The price given in the Amritsar list is Rs. 4, but that in the Pesháwar list is Rs. 8 a seer. See specimen 14.

20. *Maithra.*—Hong Kong silk. Sells in Amritsar for Rs. 3-8-0 a seer, in Pesháwar for Rs. 5, in Kohát for Rs. 5-2-0. A rough silk used on the frontier for embroidery. Some quantity is exported to Tirah for this purpose. See specimen 15.

21. *Sika,* or *Sikha* or *Sikhapuri.*—Imported from Singapur. Sells for Rs. 4 a seer in Amritsar and Pesháwar, and Rs. 4-10-0 in Kohát. A coarse silk used down country by *Pataulís* and on the frontier for embroidery. See specimen 16.

22. *Shishmahal* or *Shishmal.*—A Hong Kong silk of inferior quality costing about Rs. 3 to Rs. 4 a seer. Used by *Pataulis* only. See specimen 17.

23. *Arewá.*—A course Yarkandi silk costing about Rs. 4 a seer.

24. *Chap, Gora, Láni Maktul, Lani Chapper, Kachar, Khambandi, Ládwa, Lambi Bandi, Radha Nagri, Ateran.*—These are all Indian silks of inferior quality, costing from Rs. 4 a seer downwards, and used in making *azárbands,* &c.

25. *Dari.*—Silk mixed with flax. Imported from Italy. Used by *Pataulis.*

26. A specimen is also given (No. 18) of the silk produced in Dallan, Kohát District, to which allusion has already been made.

(c).—Centres of manufacture.

29. It must be premised that there are four distinct operations included in the term manufacture, (*viz.*, reeling from the cocoon, preparation for the loom, dyeing, and weaving or embroidering), and that there are but few places in which all four operations are carried on. Probably Amritsar is the only place in the Province in which much reeling is done, as the amount of silk produced and reeled at Dallan (Kohát) and in Gurdáspur District must be very small. Silk is prepared for the loom at Pesháwar, Kohát, Jullundur, Amritsar, Lahore, Mooltan, and Delhi. It is dyed in the same places, and in addition at Siálkot, Shahpur, Dera Gházi Khan, Jhang, and Rohtak. The silk, prepared and dyed, is woven in some form or other in most districts of the Province,

with a few exceptions. It is probably used for embroidery in every district of the Punjab.

30. The Census Report of 1891 gives the number of persons engaged exclusively in preparing, dyeing and weaving silk as 25,284. But this number does not really include all the persons engaged in the silk industry. Dyeing is as often done by the ordinary *rangrez* as by the silk-dyer (*patrang*), and a large quantity of silk is used by the cotton weavers in combination with cotton. Embroidery, again, is a home.industry. The head-quarters of the silk industry is Amritsar, which has since Sikh times been the chief emporium of the trade. Most of the China and Bengal silk used in the Province is imported *viâ* Amritsar; and there is besides a large dyeing and weaving industry in the town itself. There are said to be 3,000 persons engaged as *patpherás*, 150 as *pataulis*, 100 as *patrangs*, 250 as *towdies*, *tauzies*, or *bandi panewálas* and 2,000 as *daryaibáfs* or weavers. To this must be added a large number of persons (mostly women) who give the whole or part of their time to the embroidery of *phulkáris*, *bághs* and *chogás*, for which, as the Secretary to the Municipal Committee reports, there has been an increasing demand during the last few years for export to Europe and America. The excess of imports over exports of raw silk into the city during the last three years has been valued at Rs. 11,51,640, Rs. 12,19,551 and Rs 11,46,400. The best market for its manufactures is said to be the Punjab Native States. Next to Amritsar as a manufacturing centre must be placed Multán. This town has always produced a large quantity of silk fabrics, and of late years its trade would appear to have been on the increase. At the Census there were 1,886 men and women (chiefly the latter) employed as *patpherás*, 212 *patrangs*, and 2,402 *daryaibáfs*. There is, says the District Report, no doubt that there is less pure silk fabric manufactured than formerly, but the increased demand for mixtures of silk and cotton cloth (*viz.*, *lungis*, *sufi*, *súsi*, and *garbhi*) has given ample employment to the Multán workmen. The quantity of silk fabrics produced in the year is put at about 41,200 yards; that of cotton-silk is put at 202,000 yards. Besides this, there is a very large manufacture of cotton-silk *azárbands* and silk embroidered shoes. Next to Multán as a manufacturing centre must be placed Jullundur. It is obvious that the industry in this town also has much increased since Mr. Cookson's Monograph was drawn up, for, if the figures contained in the District Report for 1899 are to be trusted, not less than 1,700 persons are engaged as *patpherás*, 25 families as *patrangs*, and 700 persons as *daryaibáfs*. The Census Report gives an even larger total, *viz.*, 2,844 persons. The outturn of silk and cotton-silk fabrics during 1898-99 is valued at Rs. 4,08,240. On the other hand, the position of Lahore has much declined. In 1851 the outturn was valued by Mr. Cope at two lakhs. In 1890-91 the number of persons employed in the trade was given as 2,896, but at the present date there are said to be only 30 or 40 *patpherás* and 200 *daryaibáfs*. Nearly all the dyeing is done at Amritsar. At Delhi the number of *patpherás* in 1891 was 436, of weavers 626; the *patrangs* now number 50 to 70. Weaving is not, however, carried on to any considerable extent, nearly all the silk prepared in Delhi being used for embroidery. A large demand for Delhi embroidery has sprung up in recent years, mainly on the part of Europeans, and the export from the city must now be of considerable value. At Kohát the number of persons connected with the silk trade is put at 450. At Pesháwar the number of persons engaged in the trade in 1891 was 976. The number is less now. In Siálkot there are only 26 weavers of silk fabrics proper, but the total outturn of silk and cotton-silk fabrics is valued at Rs. 70,000. In 1885-86 the persons connected with the trade in Gurdáspur were roughly estimated at 1,000, but the numbers are now very much smaller and probably do not equal those at Kohát or Pesháwar. The industry seems also to have died out to a great extent in Kángra and Ludhiána, where a considerable number of weavers were at work in 1885-86. Silk weaving is also carried on, to judge by the Census Report, in Amballa, Jhang, Montgomery, Hissár, Dera Gházi Khan and Gujranwála. In districts other than those mentioned it can hardly be said to exist.

Processes of manufacture.

31. The various processes used in the preparation and weaving of silk are so fully described by Mr. Baden-Powell at page 57 following of *Punjab*

Manufactures that it is hardly necessary to enter on the subject at any length here. The following remarks are merely offered as giving a brief summary of the processes now employed and the wages obtained by workmen. They are also designed to show the extent to which the processes described by Mr. Powell in 1872 have been improved on at the present day :—

(*a*). *Reeling from the cocoon.*—The cocoons (*kaunta*) are dipped in boiling water and battered about till the gum has all softened. The threads are then collected by means of a birch brush, and the number needed for the required deniers are crossed together and placed on the hank reel (*charkha*, Illustration A), which is then put in motion and the silk wound off on to it.

In native use thick thread is far more popular than the finer counts, and a good many strands are usually reeled together. No improved method of reeling seems to have been introduced in thePunjab, though several Kashmíris living at Sujánpur are said to have acquired great manual dexterity in using the above method, owing to their employment under European supervision at Messrs. Lister's filature. The best men will reel from 4 to 5 *chittáks* of silk daily, using for this purpose 16 *chittáks* of foreign cocoons or 20 *chittáks* of country cocoons. As has been noted above, scarcely any silk reeling is now done in the Punjab. Such men as are employed on this work in the Gurdáspur District receive Re. 1 a sér of silk and their food. A specimen of silk reeled off in Kohát is forwarded (No. 19).

(*b*). *Preparation of thread for the dyer* (*carding*).—Raw silk imported from Central Asia, China, or Bengal is seldom fit for use until it has been rewound and properly cleaned. With the exception of the *sikka* (Singapuri), *gungru* (Bengali), and *kattar* (Bengali) varieties of silk, all imported silks are sent to the *patphera* or winder before they can be consigned to the dyer. The *patphera* would also seem to be called *nikádi* at Multán and Delhi. The method of winding the silk is briefly as follows :— The *patphera* first opens the skein (*attis* or *chana*) and puts one end on the *charkha* (Illustration A), which is fixed on a wall some feet from the ground; the other end is passed over the *uri* or *dhaniri* (Illustration B), which is movable, and is placed so that the skein is stretched tight. If the silk be of good quality and easily reeled, he picks out the thread with one hand and transfers it to a small spindle or pinion *úras*, *kalis*, hand *uri* (Illustration C) or *paraitha* (Illustration D), which he holds in the other hand. If the silk be much tangled and need careful winding he takes the *tabeel* or *tahvil* (Illustration E), which is fitted with a small handle, and winds the silk on to it. The object is to disentangle and equalize the threads, which, when broken, are deftly mended with the tongue. He then unwinds the silk from the *tabeel* on to a spindle (*uras*, see above) which he holds in his hand. As he transfers the silk to the *úras* he cleans it with the other hand. Each skein contains several qualities of silk, and he transfers each quality by itself from the *tabeel* to a separate *úras*. The first quality is called variously *lá*, *lawín* (apparently *awwalín*), *nák*, or *gurd*. It is also called *táni* because commonly used for the warp. The second quality is called *doim*, *pumber*, *tandal*, *peta*. It is also called *wána* or *búna* because frquently used for the woof. The third quality is called *kachar*, *bánan*, or *súf*. It is not made use of, as a rule, in weaving on the loom. A specimen is given (No. 20) of a common China silk (*phul*) in its undressed state, and of the first, second and third quality thread spun from it. Specimens are also given of a Bokhára silk before dressing, and of the *tâni* and *wána* drawn from it (No. 21). The silk intended for the *táni* or warp is then taken in hand separately by the *patphera* or sometimes by a different man, the *tanzi* or *tewdi*. The thread is too slender for working and two or three threads are " thrown " together. The method employed by the *tewdi* (*todi*) in twisting the threads is fully described at page 59 of *Punjab Manufactures*. The method discovered by the Italians, and long kept secret by them, until stolen by John Lombe of Derby, gives the thread a double twist. The Indian method only gives it a single twist, and no improvement seems to have been made in this respect. At Jullundur, however, a machine worked by a wheel is in use which works from 20 to 30 *charkhás* at the same time and thus twists a number of *tánís* by the same operation. This seems new (Illustration F).

A *patphera* is paid at Jullundur Rs. 2-8-0 per seer. At Lahore he is paid 4 annas a day, a very low rate considering the skilled nature of the work: at Multán he is paid 3 to 5 annas per day, while in Amritsar it is said that a *patphera* can earn 6 to 12 annas per day: At Jullundur a *tanzi* or *tewdi* as distinct from a *patphera* is paid Re. 1-8-0 per sér, or 12 annas to 15 annas per day.

(*c*). *Dyeing.*—The silk is now ready for the dyer. With a very few exceptions (such as the *kakra* or *sultáni*, Hong Kong silks) all silk when imported is of a white or yellow color. Dyeing is carried out either by a special silk dyer (*patrang*) or by the ordinary *rangrez*. The silk seems to be invariably cleaned by boiling in a solution of *chúna* (lime), *sajji* (carbonate of soda) and water. To this sweet oil is sometimes added. No substitute seems to have been found as yet for this somewhat strong detergent, which is, however, undoubtedly effectual, though silk loses weight heavily after immersion in it. After being washed in cold water the silk is boiled or steeped in a solution of alum (*phitkari*) in order to prepare it to receive the colour. Aniline dyes have, as noted in 1885, to

great extent superseded the indigenous dyes. They are cheaper, easier and quicker to work, and give a better gloss: but are *kachhá*. At Amritsar a good deal of use seems to be made still of country dyes, and they are said to be used regularly at Dera Gházi Khan. Indigo is still used for all combinations of blue. The colors mainly used at present seem to be—

1. *Sabz* (green); 2 *zard* (yellow); 3 *gulnár* (scarlet); 4 *golabi* (pink); 5 *surakh* (red); 6 *krimchi* (crimson); 7 *firozi* (blue); 8 *asmáni* (light blue); 9 *dháni* (pale yellow); 10 *khatta* (yellow); 11 *sharbati* (yellow); 12 *fákhtai* (dark grey); 13 *safed* (white); 14 *siah sabz* (dark green); 15 *bhura* (buff); 16 *jogía* (salmon); 17 *sandli* (brown); 18 *badámi* (almond); 19 *káfúri* (dull white); 20 *narangi* (orange) 21 *uda* (purple); 22 *kásni* (mauve); 23 *sunahri* (light tan). Specimens of these are given (*vide* Nos. 22 to 45) for the most part dyed with aniline dyes. In some cases specimens of silk dyed with country dyes have been added.

The charge for dyeing with English dyes is from 4 annas to 8 annas a seer at Jullundur and Amritsar, the materials (which cost from 3 annas to 8 annas per seer) being provided by the employer. As examples of the difference in price of country and aniline dyes the following may be quoted:—At Mooltan *kirmchi* costs 8 annas a seer when produced by aniline dyes, Re. 1-4-0 a seer by country dyes: so *zard* costs 8 and 12 annas by the two methods. Other dyes vary in the same proportion.

(*d*). *Weaving.*—After the dyer has finished with the silk, it is handed back to the *patphera* to rewind. He does this by simply taking the silk and running the thread on his fingers, winding it into a skein (*attís*). In cases where an additional gloss is required, the silk is rubbed with an iron pin (*salái*, Illustration G). It is then sent to *juláhás* or *bandi pánewálás*, who after dipping the thread into starch (*nishásta*) or gum, stretch it on the *rachh* or loom and give it to the weaver or *daryáibáf*. The process of weaving, whether the object be to produce a pure silk fabric, or a fabric of mixed silk and cotton, is exactly similar to that adopted in weaving cotton. The loom and the manner of working it need not therefore be described in detail here: but for facility of reference two illustrations are given, H showing the terms applied to the parts of the loom on the frontier, and J showing the terms applied Cis-Chenáb.

(*e*). *Making azárbands.*—The process is rather netting or webbing than weaving. The prepared thread is first stretched tight on four pegs placed in a quadrilateral on the ground. It is then taken off on to two sticks, the top stick being fastened to the wall, and the lower held between the feet (See Illustration K). The silk being thus stretched tight, the maker takes a number of bobbins (*tíli*) of reed (*kána*) or *pamber* about a foot long, and places one crossways through the silk in such a way as to divide it into upper and lower strands. Then taking a strand between two fingers, he proceeds to twist the strands in and out from right to left, and, on reaching the end of the row, places a bobbin beneath it. This operation is repeated till the whole is laced together, when the *tíli* are withdrawn and the interlaced strands secured by a knot.

The material formed is really a kind of lace in which the threads are twisted instead of knotted. Occasionally a *shísham* wood frame (*adda*) is used. The above method is also used in making hair nets and similar ornaments. The work is usually done at home by women in their leisure hours, but a considerable number of persons are employed on this work exclusively at Amritsar and Mooltan on wages varying from 3 annas to 8 annas a day.

(*f*). *Patoli-work* (*silk-braiding*).—These workmen use mainly the coarser kinds of silk for stringing jewels, but also use the better counts for ear ornaments and bracelets. In an interesting note appended to Mr. Cookson's monograph Mrs. F. A. Steel speaks of their work as follows:—"These are to be found in every *bazár* and a large quantity of silk must pass through their hands. They seem always busy and I should put them next to the comb-makers in steady attention to business. * * * * They are extremely ingenious and neat-fingered in making the various twists, knots, cords, plaits and tassels used in their trade. I have seen a cord for fastening the silver ornaments in a bride's hair which in variety of knots equalled any halyard. Necklets, amulets, and wristlets are all mounted by the *patoli* on silk with a greater or less admixture of tinsel. The quantity of silk used in an ordinary *nani* such as is worn by most women is about 4 annas worth and it will last a year or perhaps longer. The *patoli* also makes *dagi* or ear-ring suspenders to be worn when the ear holes have been torn through. The better kinds of these are very expensive, as much as two rupees being sometimes given for a pair. He also knots and fringes the ends of bridal *azárbands;* indeed his work is indispensable in women's dress. But it is during the months of Sáwan and Bhádon that the *patolís'* work is in greatest request, and a considerable amount of silk must be used at these times. The *sáwani* or rain festival begins on the first Sunday in Sáwan, when the sweeper girls put on the silken ear-rings called "*phummans*" from the tufts or balls of floss silk employed in their manufacture (*Anglice pompoms*). On the second Sunday, the Musalmán girls follow suit, and on the third the Hindús. As there is a good deal of emulation, as to which festival shall be the smartest, the number of these ear-rings worn by each girl is considerable. They cost about a pice a pair, and are made of *phummans* of seven different colours, one for each day of the festival week. The custom is universal in the

Punjab, and the ear-rings worn by the wealthier classes are very elaborate, costing as much as 4 annas a set.

"On the first of Bhádon again, every Hindu wears a wristlet of silk decorated with *pompoms* of various colours (*rakri*). The *patolis'* price for these averages one pice, but the Brahmans who go round to their constituents and put them on, receive fees in proportion to the wealth of the family. These wristlets are worn in commemoration of Rám Chandar's departure from his father's house to rescue Sita from her enemies and are supposed to preserve the wearer from harm during the year."

ARTICLES PRODUCED.

32. Silken manufactured articles produced in the Punjab may be divided into three classes: (*a*) woven fabrics of pure silk, (*b*) woven fabrics of silk and cotton, (*c*) netted fabrics of silk or silk and cotton. It should be noticed here that it is unlawful for Musalmáns to wear pure silk fabrics, and this no doubt accounts for the large manufacture of silk and cotton goods (called generally *mashru* or permitted) in the western half of the Province.

(*a*).—*Woven fabrics of pure silk*—

(1). *Daryai.*—This name is applied to those silk fabrics which are entirely of one colour ("self-coloured"), and made of the finer counts of thread.

The *daryai* made at Amritsar is of four widths, 31″, 20″, 18″, 13″, and varies in price from Rs. 3 to 5 annas per yard according to width and quality. A piece is generally five yards long. Specimens are attached (No. 46).

(2). *Gulbadan.*—Striped silk. When "shot" this is also known as *Dhúp Chán* and *Par-i-táus*; when woven in checks, is called *Charkhána.*

The lowest price at Amritsar is 7 annas per yard, that made at Lahore is from 10 to 14 annas per yard. (See specimen No. 47).

(3). *Kanawéz.*—A thick silk, woven from threads formed of an unusually large number of strands.

The price at Pesháwar is Re. 1-4-0 to Re. 1-8-0 for *kanawez* spun from Bokhára silk, and Re. 1 per yard for that spun from China silk. (See specimen 48). The use is generally confined to women of good family.

(4). *Gardáh* (*gulbarra*). Plain or striped silk, usually woven from finer counts than *gulbadan.*

The price of *gardah* at Pesháwar is 10 annas per yard. (Specimen No. 49).

(5). *Kanni.*—This is a pure silk border (also called *kinára*) made to stitch on to cotton fabrics.

The Khojás in Lahore District make a large quantity of *kanni* which they sell at 3 to 5 tola weight per rupee. They are also made and sold in Jhelum and Kohát for about the same price (See specimen No. 50).

(6). *Khes.*—Silk of a fine count woven in and out by multiplied treddles.

(*b*).—*Mixed silk and cotton fabrics.*

(1). *Lungi.*—Pieces of cotton cloth with silk borders woven on to them used chiefly for waist bands. They are also used for turbans and as *chaddars.*

The chief place of manufacture is Mooltan, which produces 125,000 yards annually; but the manufacture and use of this cloth seems to be generally on the increase in the Punjab. The price varies according to the breadth of the border. See specimen No. 51, which costs Rs. 4-6-0, the main part is of *kaddar*, the border silk. *Lungi* cloth is not much made at Amritsar.

(2). *Garbhi.*—Silk woof and cotton warps used for petticoats, *pyjámas*, &c.

Chiefly produced in Mooltan, which makes 60,000 yards annually. See specimen No. 52, a *garbhi gulbadan* in imitation of pure silk *gulbadan*, cost 11 annas. Specimen No. 53 is from Jullundur, cost annas ten. Varieties of this are called *mothra* (specimen No. 54) and *khes* (specimen No. 55).

(3). *Súfi* (*Súsi*).—Cotton woof and silk warp. Used for the same purpose as *garbhi.*

Price from Rs. 7 to Rs. 15 per piece of 15 yards. See specimen No. 56. Made largely at Multan and also in Kohát.

(4). *Lukar.*—Wool with a silk border said to be made in Dera Ismail Khan.

(c).—Netted silk or silk and cotton goods.

(1). *Azárbands.*

Made in most places of the Province. About Rs. 5,000 worth are exported from Mooltan annually, price depends on proportion of silk.

(2). *Paránda.*—Knitted hair nets.

Made chiefly by *patolís.*

(3). *Rakri* (wristlet), *phumman* (ear-tuft), *dagi* (ear-ring suspender), *dori* (jewel string), *sehra* (bridegroom's chaplet).

Made chiefly by *patolís.*

(4). *Necha-bandi.*—Work on pipe stems.

(5). *Dâthâ.*—Beard bands (Hissár). *sejband* (coverlet cords), *makherna* (fly fringe), *Sirdarwál* (Military sash), *rikâb dawál, lág daur.*

33. The names by which silken fabrics are known are very numerous. Silks which are glossed and figured are called Shúja Kháni, those into which gold is worked are known as *kinkáb. Jámdáni* is flowered silk; *tafta* that made of twisted thread; *bulbul chasm* that woven in a diamond pattern. *Pitamber* and *jhirmil* are varieties of thin soft silk, *mutka* and *mushka* of coarse silk.

(d).—Embroidery.

34. Wearing cloth of every kind is embroidered. The work may be said to fall into two classes. First, there is the ornamentation of caps, table centres, &c. (which forms the chief part of the Delhi industry), *phulkáris, bághs* (a kind of *phulkári*) and *chogás.* Secondly, there is the work (*bel-bunta*) done by women on garments (*orhni, sina-bandi, gágra, daman, lahnga, suthan,* &c.) for their own wear.

Phulkáris and *bághs* are known by a great variety of names according to the colour and pattern of embroidery used. There is for instance the *dabla* (yellow silk), *akhor* (yellow, green, and white), the *mángtika, baboya, nakhra, badám, chamkali, chaúpat, chhala, sera, búnd,* and *sirga* to name only a few out of the many names. The slightest difference in pattern seems to warrant a change in nomenclature. The *búnd* is worn as a covering by a bride on the first day of her marriage; the *sirga* is given by the bride's relations to the elderly persons present at the marriage. In connection with *phulkári* work the following remarks may be quoted from Mrs. F. H. Steel's note above referred to.

"Buyers also go round the districts largely, purchasing embroideries for the foreign markets. The result is fast becoming disastrous in an artistic point of view: not so much as regards colouring—South Kensington and Liberty have leavened the English buyers with a distaste for aniline dyes; but as regards *stitch,* which constitutes the distinguishing characteristic and beauty of Punjab embroideries. The cause of this lies in the abandonment of the coarse fabric called *khaddar* which was originally used, and which by its even, distinct, thread, and canvas-like texture, made accuracy in counting possible, and the substitution of foreign cloths, *markin, salu,* or at best a flimsy *cháusi.*

"This change has been brought about, first, by the desire of the women for a lighter head covering; secondly, by the comparative difficulty of procuring strong yet even 'home spun' now-a-days; but chiefly of late years by the senseless objections of buyers who do not understand the necessity of a coarse fabric. The result is that, except in Rohtak, Hissár, Hazára, and in the more remote and inaccessible portions of a few other districts, the real *phulkári* stitch is fast dying out. It is only another instance of the fatal facility with which the native turns to the inartistic when given the chance, and the ease with which exotic amendments may ruin the individuality of a production.

"*Phulkári* embroidery is necessarily slow, and the art is by no means easily acquired. The various patterns have different formula, which are known by heart and the proficiency of a worker is tested by the number of patterns she knows. It may be accepted as beyond doubt that, just so far as *phulkári* work deviates from geometric patterns, so far has it deviated from the ancient art, which was essentially a diapering of silk.

"There are but four colours used in real *phulkári* work, *viz,* crimson, yellow, green and white; and I am inclined to think that crimson itself is somewhat modern. The Hazára embroideries are entirely different, and partake more of the character of the *Cabuli sozankári.*

"Embroidery silk are also largely used for ornamenting the *mori* and *patka* worn respectively by bride and bridegroom at the wedding of most zamíndárs in the Punjab. Also, in the covering and preparation of the silken balls, seven, fourteen, or twenty-one in number, which are sent with the bride to her husband's house."

Use of Silk Fabrics.

35. There is a general belief, to which Mr. Cookson alluded in 1885, that the silk industry of the Province is falling off, that less raw silk is imported, less manufactured, fewer hands employed, and the reason of this decline is said to be the diminished demand for silken clothes. "European cotton goods, printed calicoes and cheap broad cloths have turned silken garments out of the field. Even for purposes of embroidery cotton thread, dyed bright colours, is said to be supplanting silk." This is no doubt true. The use of silk for wearing apparel is said to have been common in Sikh times: the use of pure silk is certainly not common now. Even the embroidery of *phulkáris* for domestic use seem to be no longer so popular as formerly. "The women," say Mrs. Steel, "themselves admit their preference for the gaudy imitations of Manchester. Of course a real *phulkári* or *bágh* according to the wealth of the house must be worn by every bride during the *phera* ceremony of marriage, and a certain number of embroideries will always be found in the trousseau; but these become more and more for show, and do duty in many outfits."

36. To statements such as those quoted above, however, there are certain qualifications. Pure silk *dupattas*, *langhás* or *shalwárs* of *daryai*, *gulbadan* or *kanawez* are doubtless worn far less than before. But there is a strong, and perhaps growing, demand for mixed cotton and silk goods. *Lungi*, *súsi*, *garbhi* and other mixed silk fabrics are largely manufactured, and very generally worn. Nor must it be forgotten that the use of mixed fabrics appeals to a far wider class than could indulge in the use of pure silk goods. The complaint that people prefer quantity to quality, mixtures of cheaper materials to the more lasting, but more expensive pure fabrics, is not confined to India alone. The change is inevitable, and is a necessary accompaniment of the more general diffusion of wealth, the raising of the standard of comfort among the poorer classes of the community. We can, perhaps, afford to disregard the somewhat sentimental complaints contained in various district reports as to the decline in the use of pure silk fabrics. If the soldier of the Khálsa no longer swaggers into the fight with his turban of *daryai*, if the bride no longer sends her father to the *banya* in order that she may appear with a fitting trousseau of Bokháran silks, it is hardly a cause for regret. It is better that fifty people should be moderately comfortable than that one should be magnificent. That silk is still used, and largely used, in the Province the figures given in preceding paragraphs will prove. The registered value of the raw silk used in the process of manufacture is 23 lakhs. The total is almost certainly larger, as it is difficult to register accurately the imports by frontier routes. Silk cording, dying and weaving employed in 1891 as many as 25,284 persons, and this total does not include the very much larger number of cotton weavers who use silk for combination with cotton fabrics. Besides this, we imported in 1898-99, by trans-frontier routes and by rail, manufactured silks to the total value of Rs. 20,36,321 of which only Rs. 89,129 worth were re-exported, Rs. 23,577 worth to Kábul, Kashmír and Ladák, the remainder to British territory. The total amount of silk fabrics consumed in the Province during the year cannot be valued at less than sixty lakhs.

W. M. HAILEY, C. S.

LIST OF PLATES.

A.—The charkha.

B.—The uri or dhaniri.

C.—The urás, kalis or hand uri.

D.—The paraitha.

E.—The tabeel or tahvil.

F.—Machine used at Jullundur for working 20 or 30 charkhás at the same time.

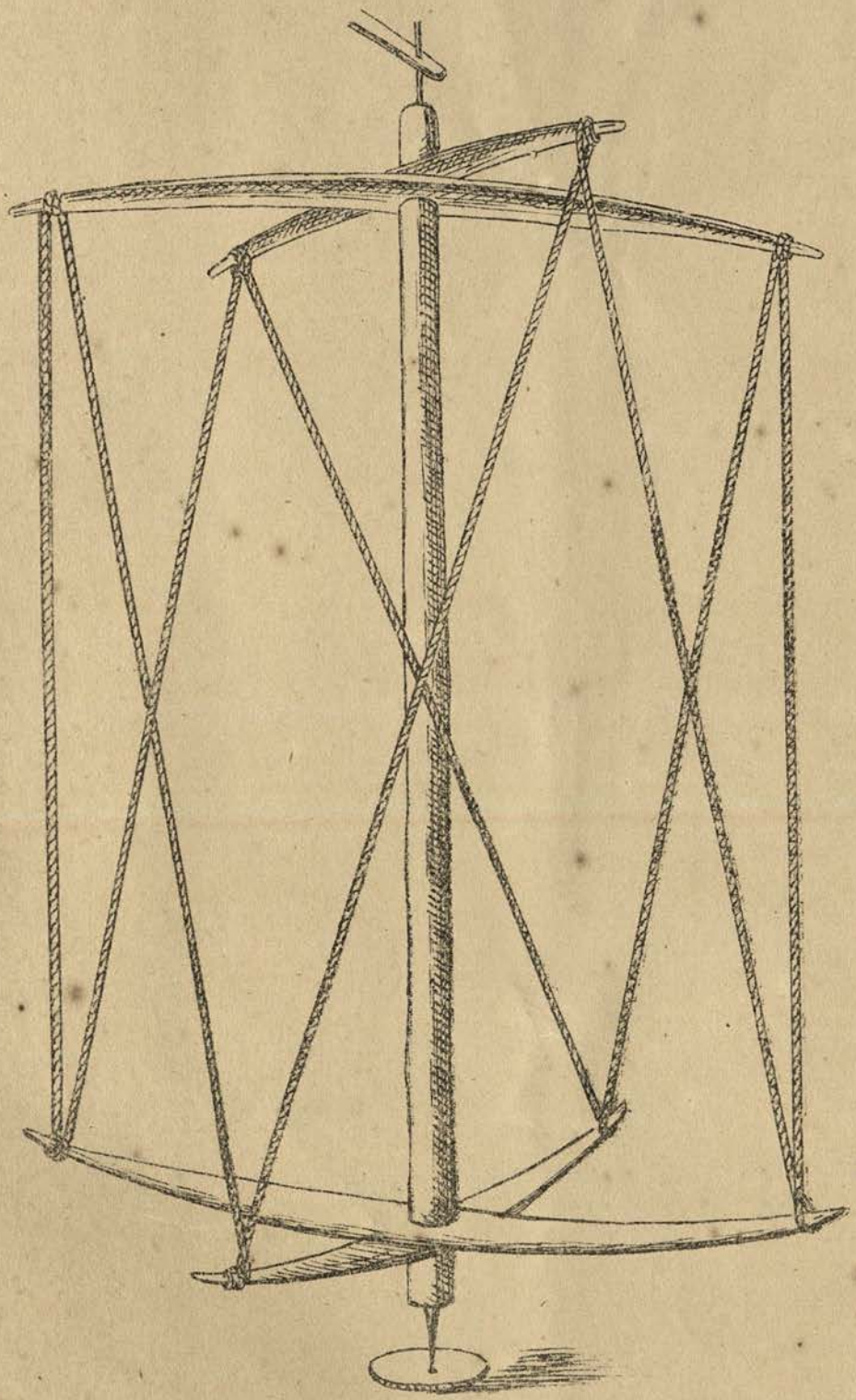
G.—Patphera using the iron pin or salái.

H.—The loom as used on the frontier and the names of the several parts.

J.—The loom as used Cis-Chenáb and the names of the several parts.

K.—The process of netting or webbing azárbands.

A



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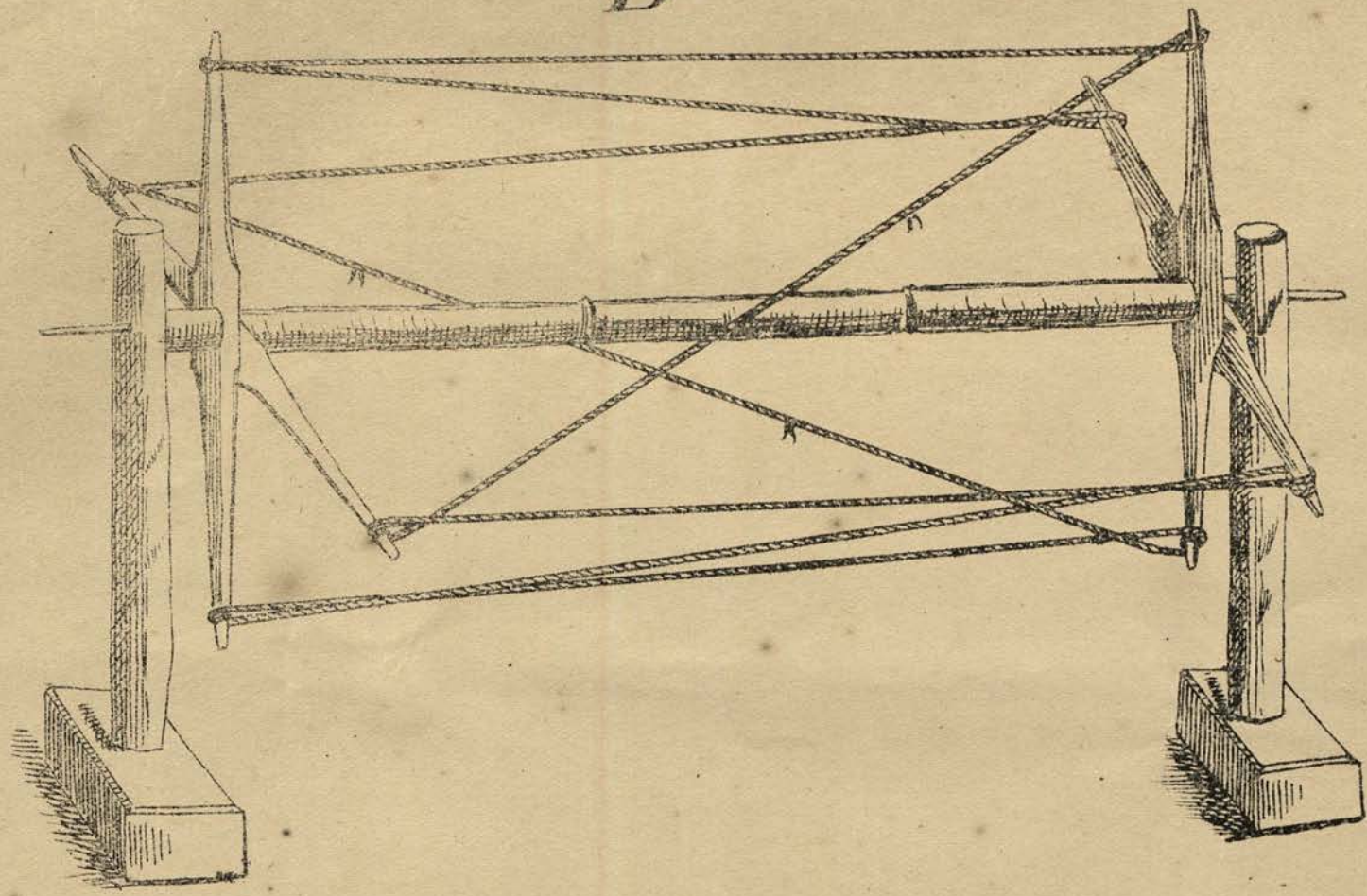

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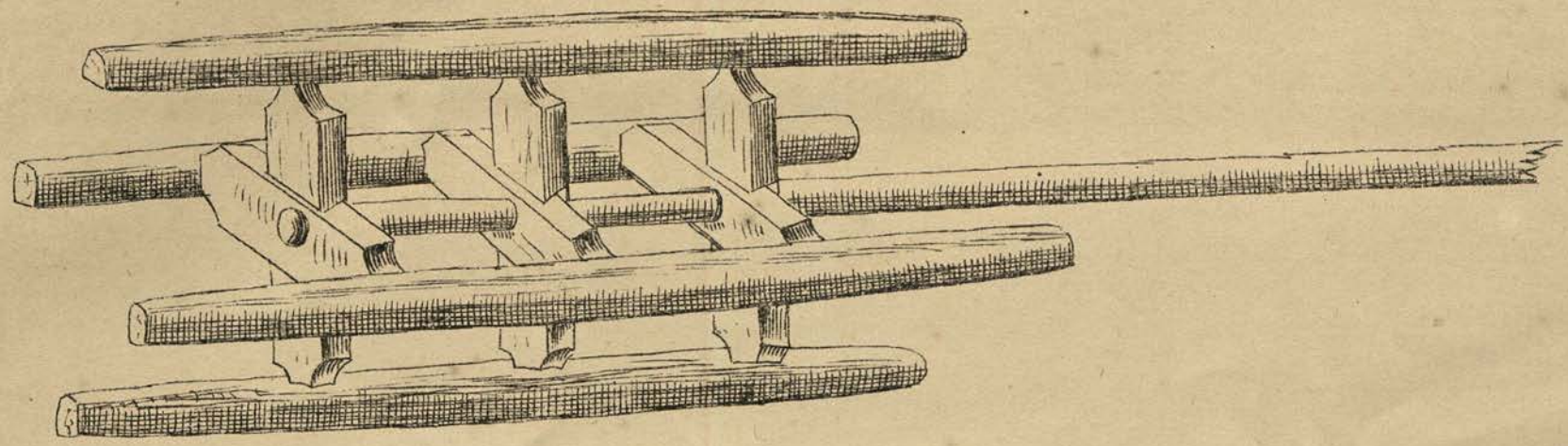

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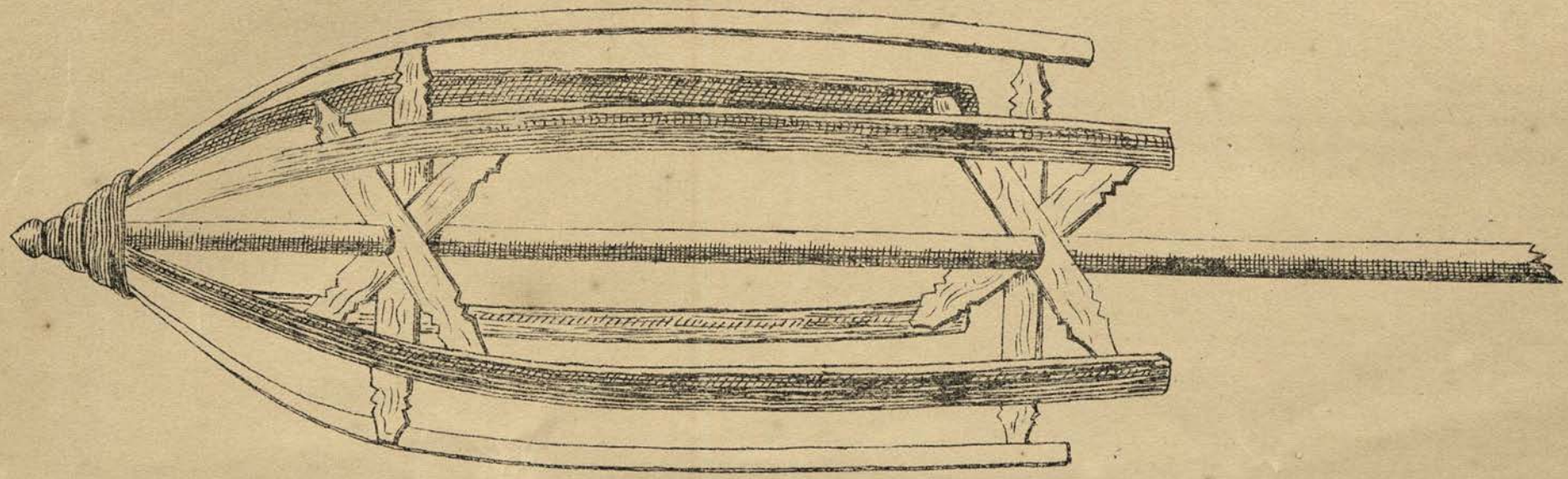

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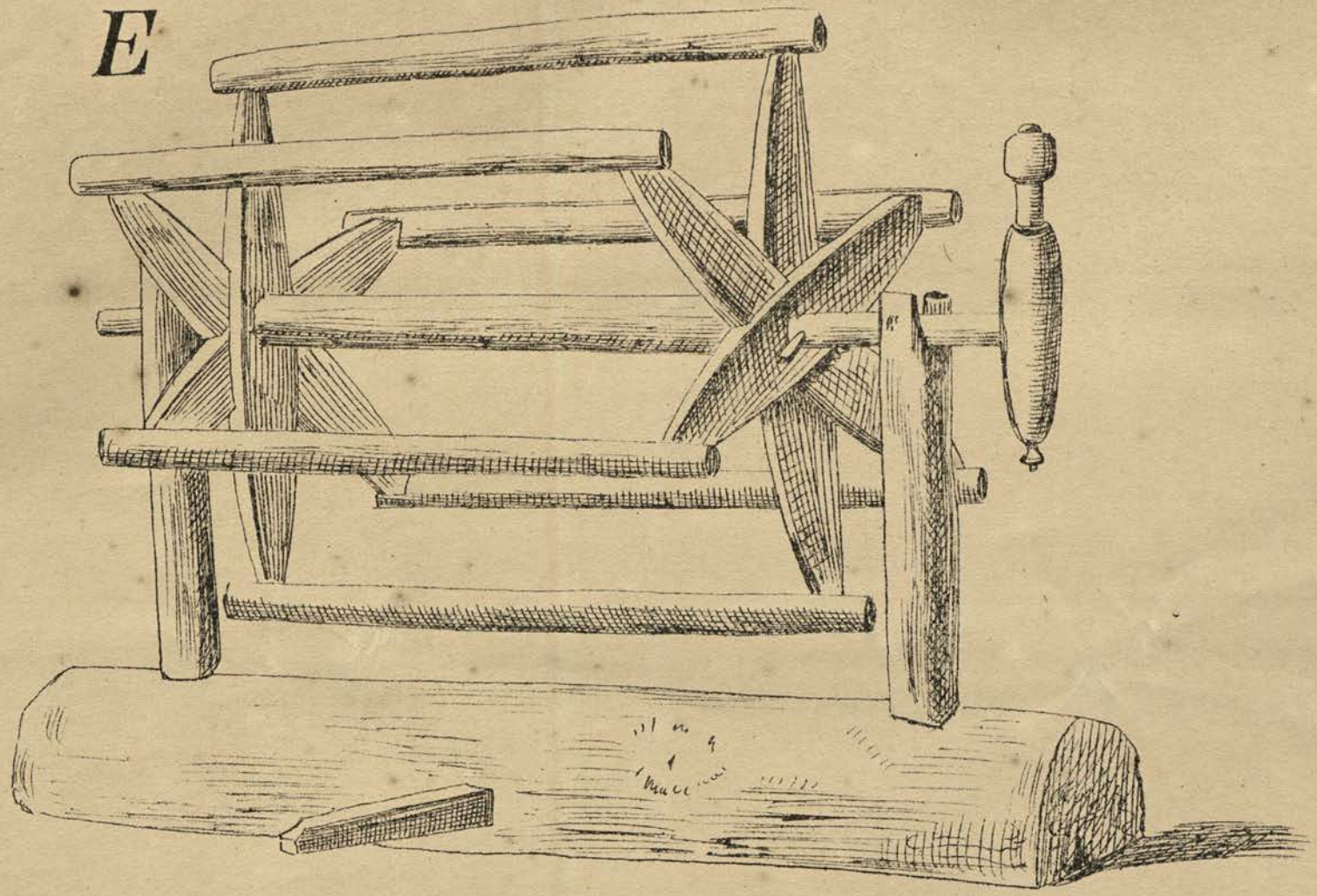

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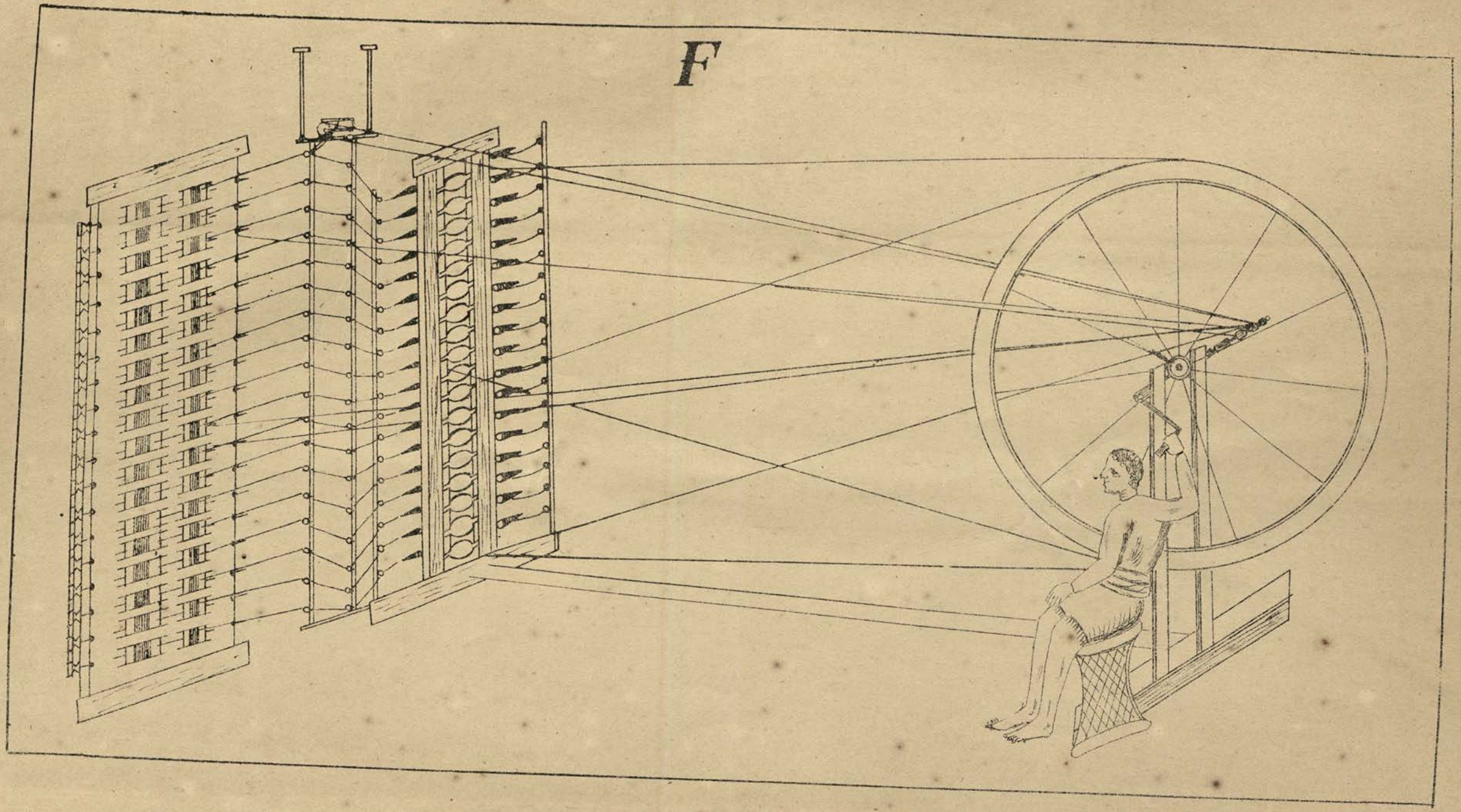
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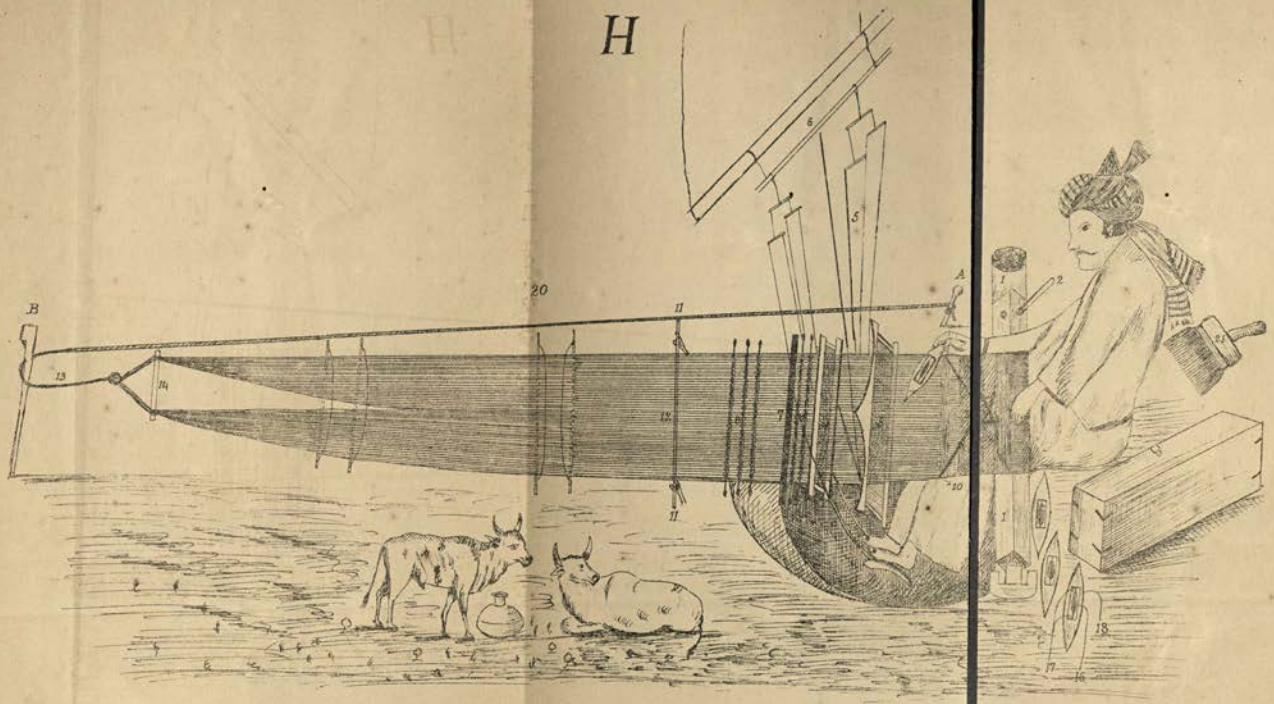
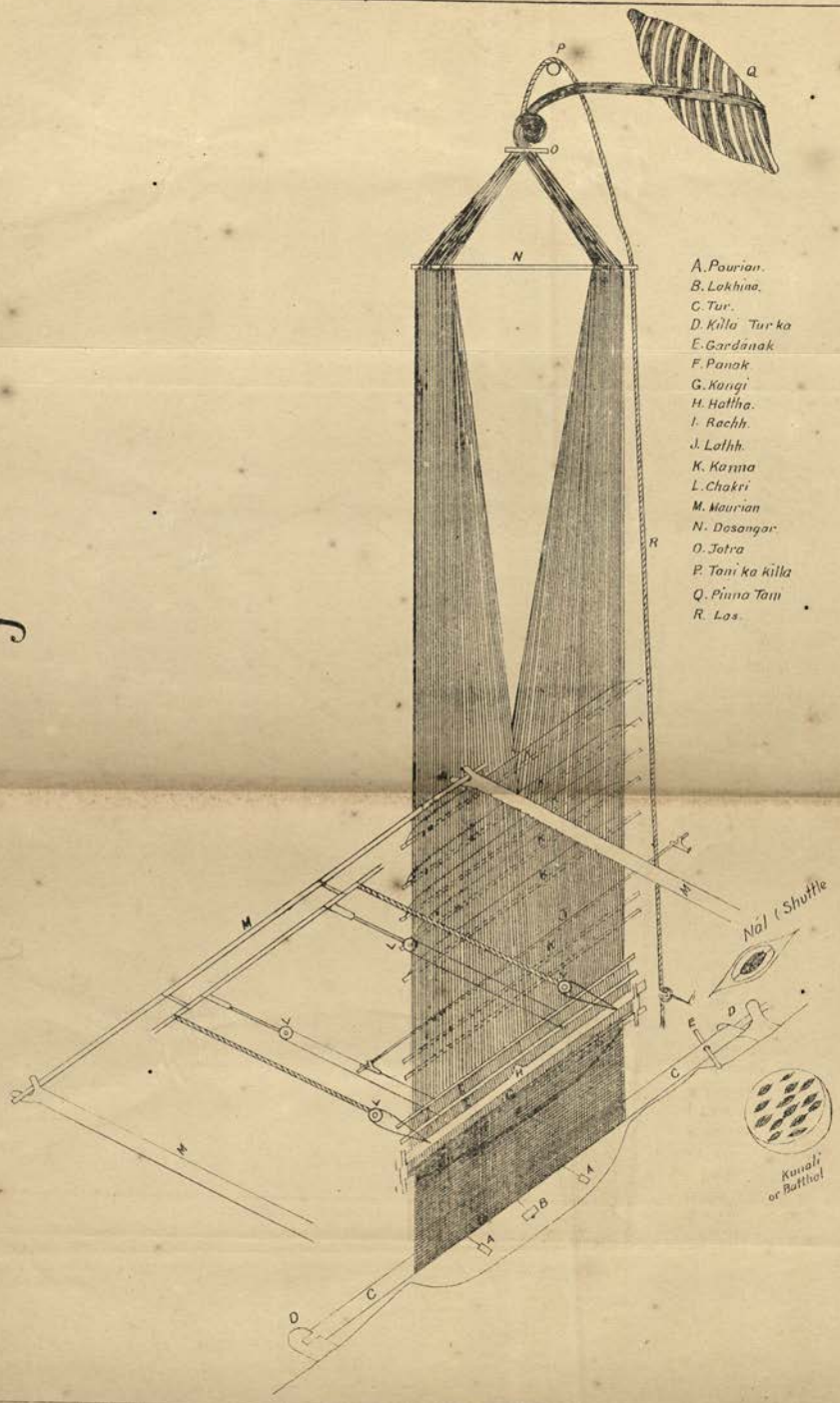


1 Tura riu
2 Gardan
3 Hatka
4 Rashh
5 Jala
6 Utar
7 Takhli
8 Chunr
9 Chaplian
10 Chukka
11 Kharkillian
12 Dang
13 Jotra
14 Dosanga
15
16 Nali
17 Salai
18 Nal
19
20 Khaddi
21 Kuchan

J


A. Paurian.
B. Lokhina.
C. Tur.
D. Killa Tur ka
E. Gardanak
F. Panak
G. Kangi
H. Hattha.
I. Rachh.
J. Lathh.
K. Kanna
L. Chakri
M. Maurian
N. Dasangar
O. Jotra
P. Tani ka killa
Q. Pinna Tani
R. Las.
Nál (Shuttle
Kunali or Batthal

K

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FRIEDLANDER & SOHN, 11, Carlstrasse, Berlin.

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MONOGRAPH

ON

IVORY CARVING

IN THE

PUNJAB,

1900.

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1900.

No. 1190.

FROM

A. H. DIACK, ESQUIRE,

Revenue and Financial Secretary to Government,

Punjab and its Dependencies,

TO

THE JUNIOR SECRETARY TO THE FINANCIAL COMMISSIONER, PUNJAB.

Dated Lahore, 19th December 1900.

File No. 2.

Revenue and Agriculture.

General.

SIR,

IN acknowledging the receipt of your letter No. 876, dated the 5th of November 1900, forwarding a Monograph on Ivory Carving in the Punjab, compiled by Mr. T. P. Ellis, Assistant Commissioner, I am directed to say that the Lieutenant-Governor agrees with the Financial Commissioner that Mr. Ellis deserves credit for his method of treating the subject and for his thorough investigation of it.

I have, &c.,

A. H. DIACK,

Revenue and Finl. Secy. to Govt., Punjab.

Punjab Government Press, Lahore—17-1-1901—556.

No. 876.

FINANCIAL COMMISSIONER'S OFFICE,

Dated LAHORE, *the 5th November* 1900.

FROM

A. H. GRANT, ESQUIRE, C.S.,

Junior Secretary to the Financial Commissioner, Punjab,

To

A. H. DIACK, ESQUIRE, C.S.,

Revenue and Financial Secretary to Government, Punjab.

SIR,

In compliance with your endorsement No. 915, dated 21st October 1899, forwarding a circular from the Government of India specifying 'Ivory Carving' as the subject chosen for the Industrial Monograph for 1899-1900, I am directed to forward a Monograph on this industry, prepared by Mr. T. P. Ellis, Assistant Commissioner, and to convey the following remarks of the Financial Commissioner.

2. The work of preparing the Monograph was specially entrusted last autumn to Mr. Ellis, because at that time he was posted as Assistant Commissioner at Delhi, the most important centre of the 'ivory carving' industry in the Province, and therefore the locality where special facilities existed for the collection of the required facts. That the Monograph could not be submitted by the required date (October 1st) is due partly to delay in the submission of District reports to Mr. Ellis, and partly to the long time required for the reproduction of some of the illustrations.

3. Mr. Ellis has arranged his Monograph clearly and carefully. In Chapter I he divides the industry into three heads :—

I.—Carving.
II.—Inlaying.
III.—Turning.

Although the last two heads are not, strictly speaking, 'carving' at all: yet Mr. Ellis has very rightly resolved to consider them equally with 'ivory carving' proper; and his Monograph is consequently a comprehensive account of the whole ivory industry of the Province.

4. In Chapter II Mr. Ellis has reviewed briefly the history of the various branches of the industry. The art of ivory carving is doubtless very old in India. The absence of any living tradition of its antiquity in the Punjab is due to the displacement of the old Hindu kingdoms by the Delhi Empire. With Sikh rule revived the open tolerance of arts that imitate objects of nature.

5. Chapter III deals with the material. It appears that for purposes of carving the ivory of the African and Burma elephant is greatly preferred to that of the elephant of India proper. The ivory workers do not, however, now trade direct with Africa or Burma, but obtain their supplies through the large dealers at Calcutta and Bombay.

6. In Chapter IV Mr. Ellis discusses the chief localities of the industry. Delhi and Amritsar are the centres of ivory carving proper; Amritsar, Dera Gházi Khan, Gujránwála, Multan and Lahore of bangle-turning; Hoshiárpur of inlaying, and Ludhiána of billiard ball turning.

7. The Chapter on workers and dealers (V) is interesting, particularly the accounts of the respective stages of training and education through which

the young ivory carver has to pass at Delhi and Amritsar. The account of the various tools used is also noteworthy. As a rule, it appears, the ordinary ivory worker at Delhi and Amritsar gets a monthly wage instead of a share in the profits from the master-craftsmen according to his merits, varying in Delhi from Rs. 5 to Rs. 50 *per mensem* and in Amritsar from Rs. 8 to Rs. 18. The average profits of the masters themselves must remain extremely doubtful. Mr. Tupper would hesitate to accept Rs. 5 to Rs. 10 per cent. on the outlay as a satisfactory estimate of Lála Faquir Chand's gains for this branch of his profession.

8. In discussing the work and its prospects in Chapter VI Mr. Ellis very truly points out the artistic inferiority of the figure or model carving to perforation and tracery. Except for a certain quaintness of conception and unquestionable industry of execution there is little to commend the figure of either man or beast as carved in ivory by the Indian craftsman to the artistic sense. With the ivory tracery, however, the case is very different. The reproduction, time after time, of the same design without the least discrepancy (paragraph 41 of the Monograph) affords some analogy to another mental capacity very conspicuous in this country, *viz.*, extreme accuracy in rhythm, combined with the apparent absence of all feeling for what we regard as melody.

9. There can be no question that the ivory industry in the Punjab which Mr. Lockwood Kipling, twenty years ago, described as at a low ebb, is destined still further to decline, for the reasons given in paragraphs 44 and 45 of the Monograph. Mr. Tupper does not think that any action on the part of Government could be usefully taken to check the decline.

10. In conclusion I am to say that, in the Financial Commissioner's opinion, Mr. Ellis has prepared an interesting and useful Monograph. He has dealt with the subject comprehensively, and deserves credit for the industry he has shown in eliciting many facts which could have only been obtained by diligent personal enquiries from the workers themselves.

I have, &c.,

A. H. GRANT,

Junior Secy. to the Financial Commissioner, Punjab.

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MONOGRAPH

ON

IVORY CARVING IN THE PUNJAB.

I.—Scope and Introductory.

1. The preparation of this Monograph on the Ivory Industry in the Punjab has laboured under two disadvantages, *viz.*, a lack of personal knowledge of the subject, and the difficulty experienced in obtaining anything but the very scantiest details of the work as carried on in the several districts of the Province.

2. The Ivory Industry falls under three heads :—

I.—Ivory carving proper.

II.—In-laying.

III.—Turning.

The first named is conducted only in two districts of the Province Delhi and Amritsar, and in the Native State of Patiála.

In-laying, on the other hand, is in a flourishing condition in Hoshiárpur, and prevails to some extent in Dera Ismail Khan, and though returns are not available in the District reports received, there is little doubt it is carried on to a minor degree in every district in which there is a demand for decorative furniture, though in the majority of such districts the ordinary medium is of a different nature.

Turning, which includes the manufacture of bracelets, *surmadánis*—small cells of varying shape and pattern used for holding the *surma* or antimony with which the women of the country are wont to darken their eyelashes—and billiard-balls, finds a place in practically every town of any importance in the Province, at least so far as the making of *chúras* is concerned, and particularly in Lahore, Gujránwála, Dera Ismail Khan, Dera Gházi Khan, Mooltan, and Ludhiána.

Though these branches of the trade are distinct, and the two last named cannot strictly be regarded as carving, I have taken the instructions received to imply that they should all be touched upon.

The three industries themselves are, however, of such minor importance, proceed so much on the same lines wherever existing, and the information furnished has been so inadequate, that the material contained in the Monograph must necessarily appear slight.

How very minute is the Ivory Industry in the Punjab may be gathered from the fact that Mr. Baden-Powell in his book on Punjab manufactures dismisses the subject in some four pages.

At the time of his writing he states that the industry is conducted only in Delhi, Amritsar, Umballa, Ludhiána, Patiála and Lahore. If this was intended to apply to ivory carving proper alone the list is too extensive for the facts of to-day, while if it was meant to include the allied industries of in-laying and turning to those should be added the names of Dera Gházi Khan, Dera Ismail Khan, Gujrát, Gujránwála, Hoshiárpur and Mooltan.

A circular was addressed to these and other districts, from which a negative answer was received, with the exception of Delhi, in which station the compiler was posted, asking for information on the following points—

I.—History of the Industry;

II.—Source, class, and cost of raw material;

III.—Places in which work is done in the district;

IV.—The workers—

(*a*) caste, numbers, whether hereditary or not;
(*b*) notes on training;
(*c*) system of working;
(*d*) tools;
(*e*) rate of pay.

V.—The masters and sellers—

(*a*) profits;
(*b*) organization and distribution;
(*c*) names of master craftsmen.

VI.—The work—

(*a*) if carried on in conjunction with other work, *e. g.*, miniature painting;
(*b*) class of work,—carving, in-laying, or turning;
(*c*) specimens of work;
(*d*) usual designs, price of work;
(*e*) notes on character of work.

VII.—Prospects.

And though in the reports received these points are not all touched upon, it will be better to adopt this arrangement as far as possible in the text of the Monograph, embodying each District Report therein with such additional information as has been derived from other sources.

3. Some assistance has been afforded in the preparation of the Monograph by Lála Danpat Rái of the Mayo School of Art, Lahore, while of the District reports the only ones of any value are those of Sardár Ali Hussain of Hoshiárpur and of the Secretary of the Amritsar Municipality.

II.—History of the Industry.

4. Ivory carving is probably one of the oldest of Indian arts, but of its existence in early history there are neither facts nor fables to prove much.

In a country itself one of the world's suppliers of ivory and from time immemorial known for the skill and patience of its artists, it is not an unwarrantable assumption that the art was known and cultivated from early times. That work of a sort in ivory was practised in India prior to the Mussalman invasions is certain from the fact that the oldest specimen of chessmen contained in the South Kensington Museum is a set discovered nearly 50 years ago during some excavations on the site of the city of Brahminabad in Sind, which was destroyed by an earthquake early in the VIIIth century.

The pieces are described as turned, plain in character, and without ornament. The chessmen and squares of the boards are black and white, alternate ivory and ebony, the pieces varying in height from one to two inches.

5. The history of the art so far as it concerns the Punjab is, however, of quite modern date.

No early travels or descriptions of the Mughal Court that I have yet seen refer to the encouragement of this particular art: of its existence in Delhi in early times there are no traces; and tradition assigns to it no earlier date than last century.

The family of Lála Faqír Chand, the present conductor of the works in the Dariba, appears to have commenced work some four generations ago, but the oldest specimen of work, that of an exquisitely carved Hindu pantheon, dates from only 50 or 60 years ago. (Since writing the above I learn that the piece has at length found a purchaser).

Since the establishment of the works in Delhi, they have been continuously carried on by the family which originally commenced them, and undoubtedly the best work that the Province is able to show is produced here.

6. In Hoshiárpur the in-laying trade is of an ancient date, prior to the British Ráj, in which times it was patronized by the Nawábs and Rájahs.

Máhárajah Ranjít Singh is credited with having employed the services of Hoshiárpur workmen in in-laying with ivory some of the wood-work of the Golden Temple at Amritsar, and other buildings in Lahore and different parts of his kingdom.

But under native rule the number of workmen was limited. The Hoshiárpur trade has received a great stimulus under the British Government from Anglo-Indian residents and travellers, and one of the results has been large exportations to America, England and the Continent, where the work competes not unfavourably with the best work of China.

Of late years the designs and specimens have improved, and the numbers afforded employment have increased rapidly.

Formerly in-laying was confined to small boxes used by natives, sticks, *chaukis*, *takhts*, shoes, and *chárpais*, while at present there is hardly an article of European furniture, tables, chairs, mirrors, easels, picture frames, photograph stands, side-boards, hat-racks, glove-boxes, etc., etc., which is not used for decorative purposes.

This departure is largely due to Mr. Coldstream, C.S., who displayed great interest in the encouragement of the work, and who is understood to have contemplated the founding of a technical school, more in the hope of improving designs than of increasing the output or the numbers of the workers.

7. Patiála has been a centre of ivory carving for several generations, the late Máhárajah being especially a munificent patron, keeping in his own employ an experienced workman whose works amongst other specimens in his collections he exhibited at the various Exhibitions in Lahore and Calcutta.

8. The art of turning *chúras* or bangles must also be of considerable antiquity. In several districts the wearing of *chúras* of ivory is indispensable to women of both the Hindu and Mussalman faiths on the occasion of marriage festivities. In connection with this custom there is an interesting usage. No girl is supposed to wear such an ornament prior to her wedding-day, on which occasion it is the inviolable duty of the bride's *mámu* or maternal uncle to present her with one.

Subsequently to the marriage it is customary for the girl to lay aside her ivory *chúras*, in much the same way as the English bride disposes of her wedding garments, and to replace them with silver ones for common use.

The custom is, however, not universal, and it is not uncommon in certain parts of the Province to see *chúras* being worn by others than brides.

It is unfortunate that the wearing of *chúras* is not as general as it formerly was, for owing to the cheapness of silver and the facility afforded by the presence of the *sunár* in every bazaar, its place is being taken by bangles of that metal amongst the better-off, whilst among the poorer classes coloured glass and wood supplies the want.

Of late years a departure has taken place in the character of the *chúras* worn, illustrating an advance in taste: whereas formerly they were invariably painted either plainly or with some crude design, fashion now lays down that they are to be worn in the natural colour, and an old set of *chúras* fetches only about two-thirds the price of a modern uncoloured one.

9. The turning of billiard-balls, which is confined to Ludhiána, is, of course, quite modern in origin; the trade in India is small, owing to climatic conditions rendering the use of benzoline or composite balls more advisable, and what trade there is in this article is mostly export, when it has to compete with European firms which have the advantage of using material already seasoned to the climate of the market.

10. Some interesting facts are forthcoming regarding the industry from the various catalogues of different Industrial Exhibitions, held from time to time in Calcutta and Lahore.

In the Punjab Section of the Calcutta Exhibition of 1864, 375 articles were exhibited from Umballa, Amritsar, Dera Gházi Khan, Gujránwála, Hoshiárpur, Jullundur, Kángra, Lahore, Ludhiána, Patiála, Shahpur, Simla, and Sirsa, consisting mostly of figures, boxes, chessmen, knives, combs, handles, and bracelets; Delhi, the present centre of the trade, being conspicuously absent. The workers chosen for special recommendation being Panah of Ludhiána, Khuda Bakhsh of Lahore, Devi Sahai-Chamba Mal of Amritsar and the ivory-carver specially employed by His Highness the Maháraja of Patiála.

At the Punjab Exhibition of 1881-82, only 111 articles were shown drawn from Delhi, Lahore, Umballa, Ludhiána, Amritsar, Mooltan, Shahpur, Gujránwála, Hoshiárpur, and the inlayers of Basi Ghulám Hussain.

The Calcutta Exhibition of 1883 shows an advance in numbers, namely, 101 inlaid articles and 66 specimens of carving, but the exhibitors were fewer comprising only Faqir Chand of Delhi, Devi Sahai-Chamba Mal of Amritsar, His Highness the Rájah of Nábha, His Highness the Mahárája of Patiála, Kanhiya Lál of Hoshiárpur, and Gondu and Gangu of the same district.

Mr. Lockwood Kipling, one of the secretaries, then wrote:—

"Ivory carving is not an art that flourishes in the Punjab. At Amritsar great quantities of combs are made, an industry which probably originated with the Sikhs who are *Nazarenes* in the treatment of their hair and beard. The ivory combs, paper-cutters, and card cases of Amritsar are ornamented with geometrical open-work patterns of some delicacy of execution, but no great interest in design. Figure work is but seldom wrought in this Province owing to the predominance of Mussalman notions, and the only figure carver of Delhi, Faqír Chand, does not appear to meet with much encouragement."

This *resumé* of the art as it existed 20 years ago, is true with but slight alterations of the industry of to-day. There has been since then an advance in one direction and a decline in another. Ivory carving has improved in Delhi and in-laying in Hoshiárpur, but in Patiála and Amritsar the industry has fallen on evil days.

III.—The Material.

11. The ivory used in India is drawn from three sources, *viz.*, Africa, Burma and India itself. Burmese ivory does not seem to be used to any appreciable extent in the Punjab, and Indian ivory is at a discount. In comparison with the African article the latter is inferior. The former when cut is of a warm transparent tint, with no appreciable appearance of grain, as it dries through exposure, the oil evaporates and the ivory itself grows lighter in colour. Indian ivory, on the other hand, when cut appears more like long exposed African, and has a tendency in time to assume a pale yellowish tint. The former is considerably harder, closer in texture and easier to polish, the lack of polish being one of the best criteria to judge whether an article is made of African or Indian ivory.

The opinion of experts on the quality of Indian ivory appears to be that its inferiority is due to the food almost entirely.

Lála Faqír Chand states that possibly the fact that so many of the animals in India are owned by Rájahs who regale them partly with sweetmeats accounts for the softness.

Mr. Baden-Powell has written:—

"The ivory with which these carvings are executed is obtained from the tusks of wild elephants. The natives say that the tusks of domesticated elephants yields a brittle and inferior ivory liable to crack on exposure to air. My informant further asserts that the cause of the brittleness of the tusk of the domesticated animal is the salt that is given with its food."

As a matter of fact, the wild elephant in India affords but little material to the Punjab, the Tirai in Oudh alone is capable of furnishing any quantity, and that is a source which is but slightly drawn upon.

The reasons, therefore, of the inferiority of Indian ivory are probably partly the surroundings of the animals, domestication and unsuitable food causing deterioration, partly climatic, and most of all an inferiority in breed.

12. The ordinary African ivory which is used in Dehli is mostly bought in Bombay, and costs in the block 20 to 24 rupees per sér (2 lbs.), the best Indian ivory is usually charged for at the rate of Rs. 16, and inferior ivory of both classes, costing anything from Rs. 4 to 10 is obtained from Amritsar, and used by the children who are undergoing training, and for coarser and cheaper work.

The same prices range in Patiála where the purchasers buy in two markets, Bombay for large quantities, Amritsar for small.

The prices in Dera Gházi Khan, due possibly to the distance from the markets, rule a little higher when it be borne in mind that the best ivory is not in common use. The ivory is divided into three classes, roughly corresponding with definite qualities :—

I.—Mirzapuri ...	...	Burmese ...	Rs. 20 per sér.
		Indian ...	„ 19 „
II.—Surti ...	...	African ...	„ 20 „
III.—Kamboti ...	...	Indian ...	„ 18 „

Ludhiána and Jagráon derive their supplies from Burma, South Africa, Zanzibar and England at rates varying from Rs. 10 to 15 per sér, this, of course, being far from the best quality.

In Amritsar, where the trade has during the last few years seriously diminished, the manufacturers in present times do not go direct to Burma, Africa or Nepál for their material—whether they ever had any trade relations with these places is not clear, though there is a general impression that in past times the leading carvers imported their own ivory. Both employers and special artizans in ivory and "artizan proprietors" now import the raw material either from Calcutta or Bombay, this they divide into three classes according to the original source :—

I.—*Purbi*, that which comes from the East, whether from Burma or Nepál.

II.—*Súrti*, which embraces importations from Bombay other than

III.—*Zanzibari*, a term used to differentiate the ivory of Zanzibar from that of the rest of Africa.

The best specimens come from Africa and Burma, and are chiefly employed in the manufacture of *chúris*, the Indian ivory, so full of flaws and cracks as it is, being useless for that purpose. Perfect samples from India are, however, sometimes obtainable, but whether these are then prized more than Burmese or African produce is not clear.

The prices appear to range from Rs. 6 to Rs. 16 per sér.

Amritsar is also a fairly considerable depôt for the distribution of ivory throughout the Punjab, most of the towns where bangle turning is carried on in a small way indenting on this centre for their supplies. The quality, however, of the ivory imported by the Amritsar traders appears to be somewhat inferior to that used by Lála Faqír Chand of Delhi, due, no doubt, to the less ambitious work attempted.

Mooltan, like the other centres, derives its ivory from Bombay, Calcutta and Amritsar in the rough tusk, and the classification adopted is apparently not geographical, but according to the immediate market at which it is bought. The rough tusk after importation in bulk, is rounded off; the circular piece is denominated *nag* and the remnant, including the thinner end of the tusk as well as the interior, is called *gatia*.

The ivory imported from Calcutta (Mirzapuri) is esteemed the better quality being whiter than Bombay, (though this, I am inclined to believe, from what is the general impression left from information obtained from other sources and the explicit statements of those who know best, is very far from

being true I give the idea of the Mooltanis for what it is worth), commanding as *nag* Rs. 22 per sér, while that of Bombay is purchasable at Rs. 20; the *gatia* from both markets realizing Rs. 6 to 8. Before using the *nag* is further strengthened by the addition of wax to prevent its bursting.

Hoshiárpur is supplied from Jullundur and Amritsar, as they are within easy and inexpensive reach, the individual workers being poor as a rule contenting themselves with procuring material from the nearest market.

A cheap quality of ivory is preferred as it is used only for in-laying, principally refuse after the turning of bracelets, and the inner brittle portion of the tusk. To some extent camel-bone is also used by the in-layers of Hoshiárpur, and except to the expert it is in inlaid work difficult to detect the difference, it is, however, more perishable and liable to decay, and quickly loses its gloss and brilliancy, though by polishing it can be temporarily restored.

In addition, *chikri*, a kind of white wood, bearing a superficial resemblance to inferior ivory when new and polished, and costing about 2 annas per sér, is used either as a ground-work or an alternative to ivory.

Hoshiárpur ivory costs from 8 annas to Rs. 5 per sér, the workers themselves are ignorant of the distinction between the Indian and African qualities.

Lahore is supplied from Zanzibar, *viâ* Amritsar, Bombay and Calcutta and the ivory tusk is on sale in the district at Lahore, Chúnían and Kasúr, at the shops of Sheo Likhan Mal, Moti Rám and Rám Diyál. Bombay ivory ranges from Rs. 15 to Rs. 16 per sér and Calcutta from Rs. 19 to 20.

IV.—LOCALITY OF WORK.

13. Except in very few instances the ivory industry is confined to the large towns. The reason is not far to seek: from its nature it is not wide-spread, it is an art that appeals to a very limited circle, and to command a sale, the purchasers being almost exclusively European, it is necessary that the work should be conducted near a centre frequented by them. The only exception to this is in the industry of bangle-turning which, as previously remarked, is carried on to some extent in every large town in the Province.

Ivory carving proper is confined to three cities, Delhi and Amritsar in British territory and in the capital of the Patiála State. In the former city Lála Faqír Chand of the Daríba practically monopolises the trade, and in fact, there is no one in the Province who can in any way compete with him.

Lála Moti Ram of the Chándni Chowk employs a few men, but the work done is inconsiderable, and Mr. Tellery, the well-known dealer in Indian *curios*, formerly employed some, but finding their products of an inferior quality he is now supplied direct by Lála Faqír Chand.

In Amritsar the quarter, known as the 'Darsheni Darwaza', contains nearly, if not all, the workers in ornamental products and the manufacture of toys, while the *chúrigars* or bangle-makers live and work in the 'Katra Mohr Singh.'

The following are the craftsmen in Amritsar:—

I.—In perforation and in-lay-work.

Bhái Natha Singh.
Bhái Híra Singh.
Bhái Deva Singh.
Bhái Mangal Singh.

II.—In combs, surmidánis, &c.

Bhái Sardúl Singh.
Bhái Ganga Singh.
Bhái Chúr Singh.

III.—Toys and figure-carving.

Bhái Karm Singh.

IV.—Bangle and chura-turning.

Gujar,
Wali Muhammad,
Híra,

and in the allied trade of miniature painting on ivory—

Bhai Kapúr Singh.

In Patiála there are only three workmen, Mussalman in religion by name Muhammad Bakhsh, Mirza Mani and Ali Bakhsh, employed to a very large degree by His Highness the Mahárájah, they living at the capital.

14. Bangle-turning though general throughout the Province has its chief centres in the Amritsar, Dera Gházi Khan, Gujránwála, Mooltan and Lahore districts.

The bangle-turners of Amritsar have been mentioned above.

Some of the best workers are those of Dera Gházi Khan, all of whom reside in head-quarters, the best known being Abdul Karím, Kádir Bakhsh, Abdul Rahím, Ghulám Hussain, Allah Bakhsh, Haidar Ramzan, Kora, Wali, Ahmad, Sahab and Waraya.

In Gujránwála bracelets are made at Sadr, Wazírabad and Rámnagar, the most important merchant being at Gujránwála itself, he importing about Rs. 1,500 worth of ivory each year, so his trade must be of considerable extent.

The supply of *chúras* is in the hands of five workmen, who have three shops between them. At Wazírabad and Rámnagar there are only two workmen, one at each place. These men are occasionally employed in making *surmadánís* and small buttons.

In Mooltan and Dera Ismail Khan the workers have some local repute, and Lahore, in addition to having a few shops, where ivory goods are to be bought, has four craftsmen of some skill in turning, all resident in the Dabbi Bazaar, by name Kádir Bakhsh, Ali Bakhsh, Nabi Bakhsh and Buddha.

15. The great centre of in-laying work is the district of Hoshiárpur. Amritsar has a certain amount, and during the summer months some of the in-layers of Hoshiárpur locate themselves at Simla, charging double prices for the privilege of purchasing there. A little is done in Dera Ismail Khan, more of the nature of embossment than in-laying, and Mauza Phália, in the Gujrát district, possesses a few artizans who occasionally engage themselves in in-laying *charkhás* or spinning-wheels.

In Hoshiárpur, the four centres are Hoshiárpur, Pur Hiran, Khuáspur and Basi Ghulám Hussain, the first named being rather a depôt and the last named being famous not only in India, but even throughout Europe and America, the best known workers being Atma Rám, Gangu, Basant Rám and Naman, while Maya of Khuáspur has also considerable repute.

16. The turning of billiard-balls is confined to the Ludhiána district, Ludhiána city and Jagráon being the two places where the industry in conjunction with that of bangle making is conducted. In the former city Kádir Bakhsh, Nizám-ud-dín, Ganda, Ghisu, Sadu and Gul Sher are the best-known, and in the latter the two Jhandás, Bulanda, Híra, Umar Dín, Gaindu, Faizu, Faqír Muhammad and Khuda Bakhsh.

V.—The Workers and Dealers.

17. In the shop of Lála Faqír Chand of Delhi about 20 men are employed in all, the majority of whom are Brahmins, though the art is by no means confined to a particular caste or religion. Ivory carving is in Delhi almost exclusively hereditary, the system of training being long and arduous, which tends to the limiting of the acquisition of the art to families.

18. The training of the would-be artist commences at an early age usually when the boy is about 10 or 12 years of age. For about four years the pupil is taught free-hand drawing by the head-carver, or in some cases by his own father, his apparatus consisting of a slate and pencil, or chalk, and his sketches

being largely figures of animals, *e.g.*, dogs, camels, and floral designs, advancing in difficulty as the youth attains to skill. From free-hand drawing the pupil advances to model drawing, using as his models some of the ivory figures executed by the workmen in the shop. Some of the sketches, which I saw drawn by the only present pupil—a lad of 11—were of excellent quality. After the learner has attained proficiency in this first step he is given a file and a rough block of coarse ivory, and he proceeds to learn how to smoothe the ivory, and render it fit for the next process at the hands of more experienced workers.

He is kept at this work for from 2 to 2½ years, at the expiration of which term he is initiated into the art of sketching on the smoothed ivory with a lead pencil, reproducing on the ivory the same designs he learnt to draw on slate. From this he proceeds to delineate on the surface of the ivory the lines on which a full figure will be carved,—this work employs him for 1 to 1½ year. When he has succeeded in adapting himself to his new material he is provided with a piece of inferior ivory and instructed in the art of filing his figures on the surface. He is then gradually taught to pass from surface to block figures, and when he has attained to proficiency in the latter he passes on to the most difficult art of all, that of perforation, beginning first with coarse work and gradually attaining to the finest qualities until at length he is able to turn out a beautiful figure richly adorned with tracery and perforated trappings.

A good deal naturally depends on the individual himself in the progress he makes, but even with the advantages of hereditary instinct, application and natural gifts it requires a period of 20 to 25 years of careful training before a workman can be trusted and considered proficient in all branches of his art.

19. The workers in Delhi are nearly all organized under Lála Faqír Chand, taking up the trade from father to son as the master craftsman himself the hereditary calling.

There are, as far as I have been able to discover, no individual workmen in Delhi; there appear at some time to have been a few, but their work was always inferior and their efforts short-lived; they were probably too poor to purchase the best class of ivory or to pass as is necessary over a perfect specimen months, if not years, without receiving payment. The capitalist is in default of the patron a necessity for the best work to be produced.

As it is, the master-craftsman employs his carvers at a fixed wage varying according to the capabilities of the workman, supplies him with the material and sets the task, he himself taking the risk of sale, of the destruction of the material, and the long period of waiting before a return is made for the outlay.

The factory of Lála Faqír Chand is above the ivory shop in the Daríba: the workers are congregated in a small room along with the wood-carvers and the miniature painters, some sit on the balcony, some on the stairs, some by open doors and lattices wherever they can obtain sufficient light to work by, surrounded by their primitive implements, the whole forming a typical scene of the Indian artist at work, the surroundings in which his work is done containing everything calculated to make the work difficult, and the result being exquisite.

20. The wage of the workers varies from that of the lowest grade earning some Rs. 5 a month to that of the best workman in the shop with his Rs. 50. Of course the apprentice is paid nothing until he is of sufficient skill to turn out a saleable article. This he is able to do in from five to seven years, and the first wage for such employés rarely exceeds 1 rupee a month.

It is only the superior workmen who are entrusted with the better class of work, some pieces represent the labour of 2, 3 or even 4 years, and at the last moment a slight slip of an instrument, a careless movement of the hand in perforating may ruin the toil of months, besides rendering valueless the precious ivory itself.

21. The tools employed are to European eyes of a decidedly primitive character, and it is a matter of more than ordinary surprise that such perfect work is produced by such inadequate means.

Sketches of the tools employed in Delhi are annexed in the appendix (Illustration No. 1).

The illustration shows 38 different tools:—

1, 2, 3, the *árí* or saw used for cutting through the bark of rough tusk; for cutting off the bark, and for the final cutting into the required sizes, respectively.

4, the *kenchi* or cutters or splitters, used for cutting fine thin sheets of ivory into strips.

5, the *chhuri* or paring knife, used in preparing the work for carving; sizes various according to whether the paring to be done is fine or heavy.

6, the *chhuri* or finishing knife, used in preparing the work for turning and rounding off edges.

7, the *sohan* or file, used for finished large work only.

8, the *sohan* or rasp, for finishing the rough edges of holes.

9, a flat rasp for square rough work only.

10—16, *birkas* or chisels, for small grooves.

15, used in place of our gauge.

17—18, groovers used in clearing small grooved work.

19—24, assorted files and rasps, *sohan* and *chaursas*.

25—29, assorted drills or *barmás*.

30—34, points and punches, used for clearing work from dust after polishing.

35—38, rabbetting planes, *randa*, used for ornamental work round bases or stands, also for beadings, and last of all chalk for polishing the finished article.

The whole of the work is done on the factory under the direct supervision of the head-worker, and no one is allowed to do work at his own home, the finished product in every case being the master's.

22. The profit of the master craftsman varies, on the one side that of expenditure there is the cost of ivory tools, the pay of the workmen extending sometimes over several months while a piece is being prepared, and the frequent delay in selling the articles produced; for instance there was until recently in Lála Faqír Chand's shop a beautiful carving of some Hindu gods which was executed some 50 years ago, and which was valued at Rs. 2,500.

On the other hand, an expensive article is sold, good orders may come in from a wealthy patron (in the winter of 1899 one specimen was sold for the remunerative figure of Rs. 8,000—£500) so that an average fair rate of profit can only be with difficulty ascertained. They are not extensive, and may be safely, according to Lála Faqír Chand's estimate, assessed at from 5 per cent. to 10 per cent. on the original outlay, which in view of the profits obtained in other Indian industries is but a very slight return.

Lála Faqír Chand has his own shop in the Daríba, where the productions of his men are sold, and he also practically supplies the whole of the jewellers in the Chándni Chowk, who sell partly on commission and partly after purchase, but the best class of work is obtainable at the manufacturer's own shop.

The comparative inadequacy of the profits on ivory carving, no doubt, injures the production of highly priced articles, and the risk of a considerable outlay producing no return unless a special order has been placed, added to the desire of obtaining cheap specimens, result in a large quantity of small and therefore cheap objects being manufactured.

It should, however, be noted that the greatest skill is devoted to the production of specially ordered goods, and it is amongst them that the best specimens are to be found.

23. The organization of the workers in Amritsar has many important differences. As far as this city is concerned the workers may be divided into two classes:—

I.—Those employed in bangle-making.

II.—Those who are engaged in the manufacture of toys, figures, and ordinary useful articles such as combs, paper-knives, *surmadánís*, card-cases, boxes of sorts, and who prepare the geometrical and floral designs for in-lay work in wood or metal.

Some of these latter restrict their operations, as a rule, to toys or inlaid work, occasionally, when trade is slack, turning their attention to other kinds saving only the cutting and turning of bracelets.

There are three castes engaged in the trade—

(*a*) the workers in ornamental productions who are called Rámgariás, or *tarkháns*, all Sikhs, due possibly to the great demand by the Sikhs of the neighbourhood for ivory combs;

(*b*) the *chúrigars*, Khatrís by caste, who are proprietors of concerns, where *chúras* or bangles are made, and

(*c*) where the artizans are Mussulmans.

The two former castes form a large part of the population, but the number of persons engaged in the Ivory Industry may be counted on the fingers of the hands. What is true of Delhi is true of Amritsar that there is no special caste identified exclusively with the art like the *sunárs* of the gold and silver industry.

Of the "Rámgariás" there are about 12 persons employed in the manufacture of articles of use and ornament, while bangle-making claims another dozen of "Khatri *chúrigars*" and in both cases the calling is hereditary.

24. As the work is less ambitious than that of the fellow artizans of Delhi so the apprenticeship is less arduous and lengthy. Lads aged from 10 to 12 years are apprenticed (*shágird*) for at least six months or a year to a master craftsman, who puts the youngsters on to working on soft woods, then to harder woods, until both hand and eye are sufficiently trained when they may be employed on the precious ivory itself without much dangor of spoiling the work or material. Sometimes the apprentice is expected to offer a small gift of some sweetmeat to his instructor, but this is not enforced, and it might be taken, as a rule, that the articles of apprenticeship require neither a "fee" from the lad nor pay from the master. When the pupil has made some progress in the acquisition of the art the teacher makes an allowance which is gradually raised to the pay of an accomplished workman. Sons often succeed to the business of their fathers: other relations may throw in their lot with their kinsman teacher or start fresh concerns of their own, but this from the fact that the industry is not a growing one must very seldom be the case, and is borne out by the fact that the number of shops has remained stationary for some years.

25. So far as the manufacture of toys and articles of use or ornament are concerned the workers manage their own business in every detail, that is, the *tarkháns* or Rámgariás import their own raw material and work it themselves assisted by one or two minor craftsmen and apprentices. In a small shop the working proprietor represents the whole establishment: in a few others the master craftsman employs a few hands so that it might be said that both systems of working obtain in Amritsar.

The result is that as each worker has more or less to live by what he makes from day to day there being no one of sufficient capital to permit of months passing while a perfect piece of work is being prepared, the best specimens of Amritsar work can only compare with the cheaper goods manufactured at Delhi, and it is a fact the more to be lamented that the exquisite productions of the latter place are not to be found here since it cannot be many years ago when they were not widely separated rivals in the art.

Those employed in bangle or *chúra* making work under somewhat different circumstances. Their business is represented by two classes of persons, the Khatri *chúrigar*, who furnishes the capital and arranges for the import of the tusk, besides watching for the demand for the finished article, and the actual artizan, Muhammadan, who is practically a servant turning out so much work for a given wage.. The Muslim worker and his Hindu employer appear to carry out each his own part to their mutual satisfaction.

26. The tools used may be conveniently divided into three classes—

I.—Those used in perforation work; carving and in-lay-work—Illustration No. 2.

II.—Tools for the manufacture of combs—Illustration No. 3.

III.—Tools used by the *chúrigars* for bangle turning.

Many of these are similar in make and employed in a similar manner as tools used in wood or metal work, the names alone being different. They are—

I.—Perforation work, etc:—

(1) *Rethi* or file.
(2) *Barma* or drill.
(3) *Kath-kashi.*
(4) *Parkár* or compasses.
(5) *Hathouri* or hammer.
(6) *Parkár* or fixed compasses.
(7) Drill-bow.

Of these Nos. 2 and 7 are clearly indicated by their names. No. 1, the *rethi*, unlike ordinary files, which are straight, is curved like a scythe, and has teeth cut on each side of the flat surface which do the filing while the edge is convenient to both cut and file, say, as a fret-saw would.

II.—For combs—

(1). The *ári* or saw.
(2). The *patal*, a fine file used in cleaning between the teeth of a comb and making the surfaces smooth between tooth and tooth.
(3). The *thasul*, used in rounding the edges of the teeth on the outside to prevent the hair catching or being torn by the sharp edge of the comb.
(4). The *rethi* or file, rough cut on one side and smooth on the other.

III.—Tools used for turning—

(1). The *dutli*, turner's tool used for removing inequalities in the tusk and getting a smooth surface;
(2). *Chírna.*
(3). *Singari.*

After the outer surface of the ivory cylinder from which the *chúras* are to be cut has been made perfectly even and smooth by the *dutli*, the *chírna* is employed to cut a number of deep grooves representing the thickness of the *chúras*. The bangle is now almost ready, all that remains is to sever the several bands between the grooves from the parent cylindrical block, and this is done by the *singari*. This tool is a bit of flat steel, broad in the middle and tapering to a fine point at each end: the ends are well-tempered, and the tool is used to turn the ivory bark by doing so towards the thickness of the tool. The length of the part thus turned is the breadth of the *chúra* to be cut. The tool is applied while the block prepared up to the second process is quickly revolved by the bow, and the bands made by the *chírna* come away from the tusk one after the other. The rings are now ready made *chúras* or bangles, no polishing or other manipulation is necessary. If painting or lacquering has to be done, it is always done before the *chírna* is set to work.

The bangle-turner's bow and lathe are of the ordinary kind used by carpenters, and present no special features.

27. It has already been said that in the early stages the apprentice gets no wage, later on a few annas are given according to the quality of the work done, but the most that even trained hands aspire to is Rs. 8 to Rs. 18 a month, a very small wage compared to the best pay in Delhi.

In regard to the profits the writer of the report states :—"There is no "more delicate question to put to an Amritsar artizan or manufacturer than "the one 'What are your profits?' It is the one he will not answer. He "is afraid of the tax-collector, and equally afraid of having his financial position "guessed at; he is difficult to convince that the question is disinterested so far "as he is personally concerned, and that it is only asked for the 'statistical "value of his answer.'"

In addition to the artizan who shapes and forms the various articles in ivory with his own hands, there are two necessary minor helpers, those who conduct the business of the *chírnawála* or sawyer, who saw the tusk into the proper sizes required for each kind of work before it is put into the hands of the craftsmen, and the polisher to whom it goes afterwards for a good finished surface. One or two sawyers do all the sawing required by all the shops in the city, and one polisher, with occasional assistance, disposes of the whole of the polishing. The remainder of the work is done in the shops already referred to, the worker in each class doing all that is necessary for his particular task. Of course, it goes without saying that the more difficult part of the work in any one article is entrusted to the more proficient workmen in a shop or reserved by the master for treatment at his own hand.

28. Patiála is the third city in which ivory carving proper is conducted, and during the lifetime of the late Mahárájah the special artists employed by him attained to a very high degree of proficiency. I regret that I have not been able to obtain as much information as could be desired from this interesting centre, but the report furnished contained only the very scantiest details.

It appears that at the present time there are only three workers, Sheikh by caste, who preserve the knowledge of the art entirely in their own families. The old patronage which they formerly received is not extended to them as liberally now, and they are more or less dependent on what they can sell to passing visitors.

The system is that of the small working proprietor, each man making and selling his own productions.

The tools they use are few, the saw, the adze, the turning frame, knives, rasps and files, all country-made, and the rate of profit is small amounting, according to the report, to only 6 pies in the rupee, or little more than 3 per cent.

The Patiála artizans employ themselves in the production of carving and bracelet-turning, but owing to the lack of means of disposal the character of the former is inferior.

29. Hoshiárpur, which is the great centre of the in-laying-work and manufacture of decorative furniture, has also several people employed in bangle-turning. The rule there holds good for everywhere where bangles are made, *viz.*, that it is only the outer bark of the tusk which is used for the manufacture of bangles. The ivory bracelet is in exceptionally good demand in this part of the Province, and the majority of Hindu women hardly consider their trousseau complete without two or three sets. A set of these bangles comprising sometimes as many as a hundred separate rings is termed collectively a *chúra*, and frequently reaches from the elbow down to the wrist, and as the sloping of the arm corresponds roughly with the shape of a tusk the outer rim of a tusk frequently finds its way in gradiated bangles on to a woman's arm. The end of a tusk, that is, the portion which is too thin to permit of more bangles being made, is employed in the other ivory industry of Hoshiárpur, in-laying, with which the district is more generally associated.

The workers are for the most part ordinary carpenters, mostly Hindus, without being confined to any particular caste. They number about 40 at Basi

Ghulám Hussain, 30 at Khuáspur, 20 at Sadr and 10 at Pur Hiran, and in addition there are the children of various ages undergoing training, so that there are not many less than 200 actively engaged in this industry.

As is the case in most Indian arts, the industry is hereditary, without being as exclusive as is popularly supposed, the children of an artizan taking to the father's trade without reference to his own capabilities. In-laying does not require the same application and same instinct as carving, and the reason of the industry being hereditary lies rather in the intense conservatism of the people than in the necessity for special gifts.

This conservative peculiarity is illustrated further in this particular trade, for though the in-layers of Basi Ghulám Hussain have been known throughout the Punjab for three or four generations, and though the demand for decorative furniture amongst Europeans has led carpenters to adapt themselves to new forms, yet the peculiar inlaid work with ivory remains practically local.

The organization of the workers is non-existent. Each worker works at his own home and for his own hand, surrounded by the members of his family and making the table or box, whatever he pleases, and completing it himself by in-laying it. When it is finished he takes it to the bazaar, and disposes of it to the best advantage he can to the dealer, who maintains a shop in the town, or wanders over the length and breadth of India from Peshawar to Calcutta, to Madras and Bombay, carrying with him several hundred-weights of goods which he displays on the verandahs of the bungalows.

There is hardly any one of the actual workers possessed of sufficient capital to command exterior service; the men appear, as a rule, to be extremely poor, and living as they do from hand to mouth, the main object of the artizan class is to dispose of the goods as soon as possible for what they will fetch.

Of training a description is impossible, as it is without method. It appears to consist mainly of mere intelligent watchfulness on the part of the boy looking on at his father working in the homestead, and picking up gradually the incidental points,—not a difficult task seeing that from his cradle he is surrounded by those engaged in the work, and bit by bit imitating those whom he has been watching. The child is usually given a few hints at the age of 7 or 8, and with those he may be said to enter on his apprenticeship such as it is, and in the course of 10 or 12 years he becomes a capable workman.

The tools employed are those generally used by carpenters and ironsmiths for in-laying, engraving and setting. No progress has been made by the artizans in the improvement or invention of implements, though some English made machines are gradually coming into use; but the better work is still done by hand.

The profits of the trade appear to be extremely slight, the chief gainers being the middleman shopkeepers, who seem to have a kind of local understanding to keep down prices paid for the finished article, while charging the purchasers three and four times the amount they themselves have invested.

On the rare occasions on which the artizans work for wages they receive from Rs. 4 to Rs. 16 a month, and Rs. 10 may be taken as a fair average of the monthly income of the artizans when working for themselves, an amount which fades into insignificance by the side of the bannia's profits. The few artizans who themselves employ others make, however, a fairly handsome profit, sometimes as much as 100 per cent.

30. In Ludhiána, which may fairly be considered the centre of turning, both the manufacture of *chúras* and billiard-balls find a place.

In the town of Ludhiána the turners are Qureshi Muhammadans, who are the hereditary depositors of the trade, and who are commonly called *chúrigars*. The artizans are of the same faith, and also carry on the trade hereditarily.

The organization is simple, the turner working at home and selling the *chúras* either to order or to casual customers.

31. The turners' implements used in Ludhiána are fuller and of a more elaborate description than are employed elsewhere, and they have accordingly been chosen for illustration. Illustration No. 4.

The names, Urdu and English, are as follows :—

I.—*Jand*, the turner's frame.

II.—*Kanda*, iron-rod.

III.—*Sua*, pointed pivot.

IV.—*Kamána*, bone.

V.—*Subbal*, iron-rod.

VI.—*Loha rach*, pointed chisel.

VII.—*Mathni*, a broad chisel for smoothing.

VIII.—*Singari*, used for cutting the ivory and separating the cylinder into bracelets.

IX.—*Chírna*, a fine pointed handleless chisel.

X.—*Rangwata or Agwartha*, polishing stick.

XI.—*Kher*, a fine pointed chisel.

XII.—*Verma*, gimlet.

XIII.—*Kalbút*, the wooden cylinder on which bracelets are mounted for colouring.

XIV.—*Bambia*, stick to which the piece of ivory is glued with *lák* for carving.

XV.—*Tíra*, a wooden pin introduced into the hollow of the ivory while on the lathe.

XVI—XVII.—*Rachi* and *roda*, bars of iron worked into a blade at ends, used for turning ivory.

XVIII.—*Dhur*, turning axle.

XIX.—*Tesha*, adze.

XX.—*Ari*, saw.

XXI.—*Chari*, hooked tongs.

XXII.—*Kethi*, files.

XXIII.—*Ghamána*, bow string.

The amount of work that an efficient worker can do in a day is astonishing, he being able to produce about 8 sets of coloured bracelets a day, containing some 160 to 240 separate rings; the profits, however, are small, amounting to not more than 1½ anna per set, *i.e.*, 12 annas a day represents a workman's earnings. The turner of billiard-balls can at most produce one set of three per day; the value of the ivory employed in a set is from Rs. 16 to Rs. 18. A turner receives when working for a trader Rs. 3 a set; the trader charges his customer from Rs. 3 to Rs. 4 a set more: a good set being obtainable for from Rs. 20 to Rs. 24.

32. Mooltan is also an important centre of the industry of bracelet making, the bracelets being made from the *nag* described above, while the *gatia* is used for *surmadánís*, buttons, *dibiás*, small pen-stands, boxes and chess-pieces of an inferior quality, all turned work not carved.

A full *nag* will supply from 150 to 175 pairs of bracelets.

Only two qualities of bracelets are manufactured here: the one thick and the other thin, and, as a rule, the workers work entirely in their own homes, and except in very few instances are piece-workers of the wealthy *mahájans* of the city.

The usual practice is for the *mahájan* or banker to purchase the ivory, and hand it over to the turner, who transforms it into *chúras*, receiving in return pay by weight—for thin bracelets 8 annas a lb and for thick 4 annas.

The price of *chúrís* depends on the width, the unit of measure being the *lai* about 1¼ inches, and the following are usually supplied for a rupee—

10 *chúras* of 14 *lai.*
9 *ditto* 12 „
8 *ditto* 10 „
7 *ditto* 6 „
40 to 60 for children.

An experienced worker can turn out some 150 bracelets in a day of six hours.

There are only 9 turners in Mooltan ; the demand is much greater than they can supply, and a fair number are imported into the villages of the district from Dera Ismail Khan and Chiníot.

33. Much the same remarks apply to Dera Ismail Khan, where, however, there is a small industry in the hands of the ordinary *tarkháns* in the manufacture of ivory knobs and studs for affixing to lacquered wood-work. It is unimportant, and may be disposed of in the words of Mr. Lockwood Kipling:—

"Ivory ornaments in the shape of knobs, studs and flowers ingeniously etched and carved are liberally applied.....This practice arose in the first instance from the necessity for covering with an ivory stud the hole left in the ware by the iron lathe point on which it revolved. It is carried to excess at Dera Ismail Khan."

34 In Lahore the turners are Mughal by caste and the profession, as elsewhere, is hereditary. The boy of a family is invariably taught by his father, beginning when about 10, by making wooden *chúras*, and then being set to prepare round articles such as *naukas* out of bone, eventually being permitted to use ivory.

The ordinary standard of *chúrás* is a set of 100, and the usual prices charged are—

Per set of uncoloured, thin	Rs. 5 to Rs. 9.
Do. do. thick	Rs. 4 to Rs. 7.

The work is of a fair quality and the instruments used are only 7 in number:—

1, the *Tâbi*, a long iron plane.

2, *Chírna.*

3, *Singari.*

4, *Kherád.*

5, *Kamáni.*

6, *Sil.*

7, *Tesha*, the nature of which has already been described.

35. Gujránwála calls for no further remark, the trade is practically in the hands of one and the art of turning presents no special features there.

36. Dera Gházi Khan has a fairly flourishing trade, and one or two points require notice.

The pupil usually learns his art by the use of cocoa-nut, and in a year's time can safely be trusted with ivory. The system of work is somewhat peculiar, similar to that which prevails in the manufacture of silver ornaments. The would-be wearer himself purchases the ivory, and hands over the raw material to the workman, who manufactures the set sometimes at a daily wage, sometimes at so much per set. In the few cases where the workman provides the ivory his usual charge is the price of ivory *plus* one rupee per set, and his average profits range from Rs. 20 to Rs. 40 a month. The tools in use are the universal *chírna* and *singari*, and in addition the *kirpána* used for smoothing the ivory, and the *larhána* used for marking off the bracelets on the piece. Illustration No. 5.

VI.—The Work and its Prospects.

37. In the factory at Delhi the carvers are confined to their particular branch, while side by side with them under the same organization and same roof work miniature painters and workers in sandal-wood, and though the ivory carvers are frequently capable of working in the latter material, they are, as far as their respective crafts are concerned, practically apart.

38. As in all Indian work, there are certain well-defined stock models, which are reproduced time after time, possibly with slight variations in ornamentation as they suggest themselves to the fertile ingenuity of the carver. It would be a mistake, however, to imagine by this that they are incapable of working out of the beaten tracks, for not only are the best carvers possessed of considerable artistic feeling and imagination, and capable of reproducing their ideas in ivory, but they are extremely adept in carving any figure or design which may be specially ordered even from so unsatisfactory a model as a photograph. Some of the best, if not the very best, work produced is that done under these conditions ; the purchaser who desires a particular object carved must necessarily be wealthy, and the most skilful worker is put on to execute the commission and the price, of course, is naturally heavier than what is usual for specimens of stock designs.

These latter cover a wide field, and of each design there are several qualities dependent partly on the class of ivory, partly on the amplification in the way of tracery and perforation, and partly on size.

Below is appended a list of the stock designs, with minimum and maximum prices of specimens of each description :—

Elephants	Rs. 2 to Rs.	2,000
Bullock-carts	„ 4 to „	1,500
Peacock-ships	„ 15 to „	300
Hindu pantheons	„ 4 to „	2,500
Chessmen	„ 2 to „	1,500
Camels	„ 1 to „	100
Horses	„ 1 to „	100
Palanquins	„ 7 to „	100
Jamjhani & pálki	„ 7 to „	100
Paper-knives (with variously designed handles)	„ 10 to „	400
Card-cases	„ 4 to „	50
Boxes	„ 20 to „	200
Picture-frames	„ 15 to „	300
Sticks	„ 10 to „	150
Combs	„ 4 to „	50
Fans	„ 15 to „	100
Miscellaneous toys	„ 8 to „	10

Of these designs I have selected five for illustrative purposes, and one other that of a model of the Táj Mahal, and I may here record my thanks to Mr. W. I. Cadman, 24th Company, Royal Artillery, of the Fort Delhi, for the assistance rendered in the preparation of the sketches. Illustrations Nos. 6—11.

It is a pleasing feature in the work that most of the designs are essentially Indian, and the craving after European models so characteristic of other Indian arts has not as yet begun to influence the Delhi carving to any appreciable extent, and consequently there is an absence of deterioration to imitation.

39. The characteristics of the work may be roughly divided into three :—

I.—Figure or model carving.

II.—Perforation.

III.—Tracery, usually floral.

These three characteristics are frequently combined in a single specimen, and it is only in the cheaper model specimens that ornamentation is not introduced.

40. Of the three the former is the least satisfactory. There is in every figure a certain unnatural stiffness, a want of flexibility in appearance. Even in the highly carved elephant figures, where the trappings, chains, decorated *howdahs*, &c., are exquisitely executed, the general effect is somewhat marred by the clumsiness of the central figure. It is often a little exasperating after admiring the perfect symmetry of the tracery designs to be confronted with an animal round which these designs are worked apparently taken out of a child's Noah's Ark, without joints, and with its left side invariably concave and its right convex.

For this there are two reasons, the one historical, the other the result of the material in which the work is executed.

There is no doubt that the long period of Mussalman predominance, with its attendant discouragement of the productions of animal figures, has had a limiting influence on ivory carving as it has on all Indian arts. The practical proscription of anything which might tend to be construed into an image has so effectually discouraged the art of producing them that the best work must be sought for in what was a legitimate subject for representation.

The other reason is the desire to as far as possible economise the material used, the result is that in order to prevent waste, the carver works as near the outer bark as possible, and as there is in the tusk itself a natural curve, the effect on the figure is that noted above, the peculiar lop-sidedness (if I may use a forcible term) of the animal.

Besides the desire to economize there is a further quality in the ivory itself which leads to the same result, *viz.*, that the further you get away from the bark the poorer becomes the ivory, more brittle, more liable to discolouration, and harder to take on polish.

The Jury Committee of the Exhibition of 1864 described Punjab carving as being at a low ebb. This appears still to be true to some extent of figure carving, though even the figures of Delhi compare not unfavourably with the best specimens of Burma. This opinion, moreover, is to be read with one important modification, for it should be remembered that the best work of the Province, that of Delhi, was not represented at the Exhibition, and there is a considerable difference between a Rs. 2,000 model from that place and a Rs. 20 or Rs. 30 one from Amritsar, the only survivor of carving proper of the Punjab exhibitors. A reference to the list of exhibits will show that the Province was represented by small and inferior objects only.

However applicable those remarks may be to figure carving, there must have been a considerable advance in tracery designs and perforation.

41. Tracery designs, geometrical and floral, of the most intricate character are exquisitely worked, and the same design, for instance, in the handle of a paper knife is reproduced time after time without the least discrepancy. Descriptions of such designs are impossible, but they all display a real artistic feeling amongst the workers. There is nothing so striking as the comparison between the caparisons of a figure and the figure itself, or between, say, two paper knives, one with an animal design and the other with a floral pattern.

42. The most difficult work of all is that in which Lála Faqír Chand's workmen excel—perforation. Two of the best specimens, to which no reproduction can do justice, are one a chain attached to a *howdah* on one of the elephant figures made of a solid piece of ivory—elephant and trappings—with the links interlaced and separate, each link not being greater than the size of a pin's head, and the whole chain containing upwards of 50 links, and the second the head of a paper knife, the exterior being a beautiful floral design closely worked, and the interior hollowed.

The caged devils of Burma, remarkable as they are, are not so difficult to reproduce as some of the figures made in Delhi, where it is not infrequent to find an exterior design of considerable intricacy reproduced on an interior piece of the same block.

43. In connection with ivory carving there is an interesting adjunct—miniature painting conducted in Delhi. The two industries are closely allied, but

the latter is outside the scope of the monograph, and all that it is necessary to note here is the method of preparing the ivory for the painter. The ordinary method is by sawing the tusk with a fine saw into long thin plates, which are subsequently cut as required into various sizes. The plates are then generally placed in a press with the object of preserving the flattened shape, and kept in that position for four to nine months, until they become properly dry, seasoned and clear of oil, and there remains no further danger of cracking or discolouration. On being taken out the plates are subjected to frequent and careful planing with instruments, gradually becoming finer and finer, until at length they become perfectly smooth, and are passed over to the polisher, who after polishing them for some time with chalk completes the process, and the plates are ready for the miniature painter.

44. The prospects of the ivory trade in Delhi are stated to be on the whole declining. Pessimistic views are, on the whole, every bit as prevalent with the Indian dealer as with the merchants of the west, and I am not sure that these views are altogether justified. Lála Faqír Chand tells me that at the present there is a marked depression in the trade due to the out-put being in excess of the demand, but this is merely stating the matter in another way. Certain it is that there is no deterioration in artistic skill, and, if the standard of the work may be taken as a criterion, little in demand, otherwise the skill would not be asserted, unless an adequate remuneration were forthcoming.

Those causes which operate against the development of other Indian arts are to some extent apparent here. The daily increasing proximity of Europe leaves the present Anglo-Indian with less inclination and power to patronize native art in the way and to the extent his predecessors did, and there is a constant tendency to more and more Europeanize the ornamentation of a bungalow, with the attendant result that natives adapt themselves to the production of articles more and more on an European model. The increase of communications internally, resulting as it does in the constant changes of officials, leaves the latter with less desire to accumulate articles liable to destruction, and there is also the constant tendency to estimate the cost of labour on the basis of that of the unskilled artizan, and Europeans expect to obtain articles in India at a ridiculously lower rate to what they could purchase them for in England. The idea that the prices asked are excessive is not in the ivory trade a just one, but the natural result on the industry itself is the production of inferior work to satisfy the market.

The levelling tendency of British rule, while it has, on the one hand, bettered the condition of the mass of the people, has by the gradual absorption of the old wealthy classes and the reduction of native courts, removed the greatest incentive, that of patronage, that native art possessed, and though the country be wealthier, the wealth has the tendency of gravitating from those who had the desire to encourage art, to a class which has no pretension to artistic feeling.

On the other hand, though both the Anglo-Indian and native purchasers are thus limited, the same causes have widened the market in another direction. Year by year the tourist element increases in volume ; in the majority of cases a tour pre-supposes wealth, and though the flying tourist can hardly be regarded in the light of a patron of art, he does purchase artistic treasures as curios.

In some cases the travelling visitor buys the best, especially the Americans and the few Russians who travel here; our own public are not so much to the fore as one could wish.

45. In Amritsar ivory carving and bangle-turning are the only occupations to which the artizans are capable of turning their attention, with some few exceptions who occasionally during a lull in the demand for ivory goods take up wood work. The carvers usually employ themselves on small figures of animal and mythological subjects, a little in-lay-work, perforation or *pinjara* work, manufacture of combs, plain and fancy, walking-stick handles, perforated and carved boxes, paper-knives, bracelets, and *surmadánís*, the character of which can be seen in the appendix,———(Illustrations Nos. 12—14) while Illustration No. 15 gives a good idea of the conditions under which ivory *chúras* are made.

Articles of use, such as *surmadánís*, are frequently made in the pattern of vases, boxes and ornamental cylinders and globes in various designs representing fruits or vegetables, *e. g.*, the mango, *brinjal*, chili, maize, &c., while in perforation and in-lay work both geometrical and floral designs are used. At best the work is of a cheap quality, and the ordinary prices obtaining are—

	Rs. as.	Rs. as.
Sarmadáni	0 4 to	2 8
Combs	0 8 to	5 0
Toys, figures, &c.	1 0 to	20 0
Card-cases and paper-knives	1 0 to	7 8

while for special work it is usual to arrange the price beforehand according to the work required.

There appears to be in the Amritsar work little or no ambition : a large part of it consists of plain undecorated pieces, the figure carving is wooden and clumsy in the extreme, and the perforation work, though at first sight pretty, displays a lack of variety, while the floral designs are essentially simple.

At the best Amritsar work can be classed as simply pretty and effective curios, and it has no pretensions to be compared with the best examples of the artistic work of Delhi.

The future prospects of the Amritsar work cannot be said to be hopeful.

46. One point should be noted, and that is, that it aims at a different market than Delhi. So far as Europeans are concerned, Amritsar only supplies them with small cheap curiosities, but it has, unlike Delhi, a fairly wide native market. As the religious capital of the Sikhs, the ivory combs find a ready sale, and the Amritsar *chúras* are in fair demand amongst the Jat women of the Central Punjab. But the demand from these two sources is steadily declining. Twenty years ago the cost of the raw material ranged from Rs. 4 to Rs. 6; it has now risen to from Rs. 6 to Rs. 16; wages, too, have since risen, and the cost of the finished article now as compared with then has enormously increased.

The rise in price has consequently affected the demand, and the growing tendency amongst natives to curtail expenditure on marriage ceremonies has encouraged the use of silver *chúras* in substitution for the much dearer ivory.

The numbers of workers are steadily decreasing, and both the Rámgariás and the Muhammadan *chúrigars* send their children to school rather than put them to work in their shops; draftsmanship claims a fair quantity and the Railway workshops attract more.

47. From all the centres of bangle-turning comes the same reply, that the cheapening of silver and the dearness ot ivory are gradually but surely driving the latter out of use, and though the ivory *chúra* is not likely to permanently disappear there is little prospect of the industry recovering its old prosperity.

As has been already noted, the in-layers of Hoshiárpur use any article for their work, and the character of the work is well illustrated in the appendix, Illustrations Nos. 16—17. The decorations applied to furniture are extremely simple in design, geometrical and floral figures being practically exhaustive.

48. The Hoshiárpur trade rose suddenly into great favour amongst Europeans, and the workmen have easily adapted themselves to decorating Europeans' furniture in addition to articles in native use. The first glamour of the novelty has, however, worn off, and though the favour it has found amongst Europeans, both in India and at home, is not expressed as loudly as formerly, there is no reason to doubt it will, if only on account of its effective decorative qualities, find as ready a sale in the future as it has done in the past.

One thing, however, is necessary, and that is a departure in the invention of new designs. The workmen are capable of reproducing them, as is evidenced by their readiness to in-lay any design they may specially be asked to do, and it would be well if they were encouraged more in this direction, so that they might the more easily satisfy the demand for variety in the English market, which after all is the mainstay of the in-laying trade as it is of the art of ivory carving.

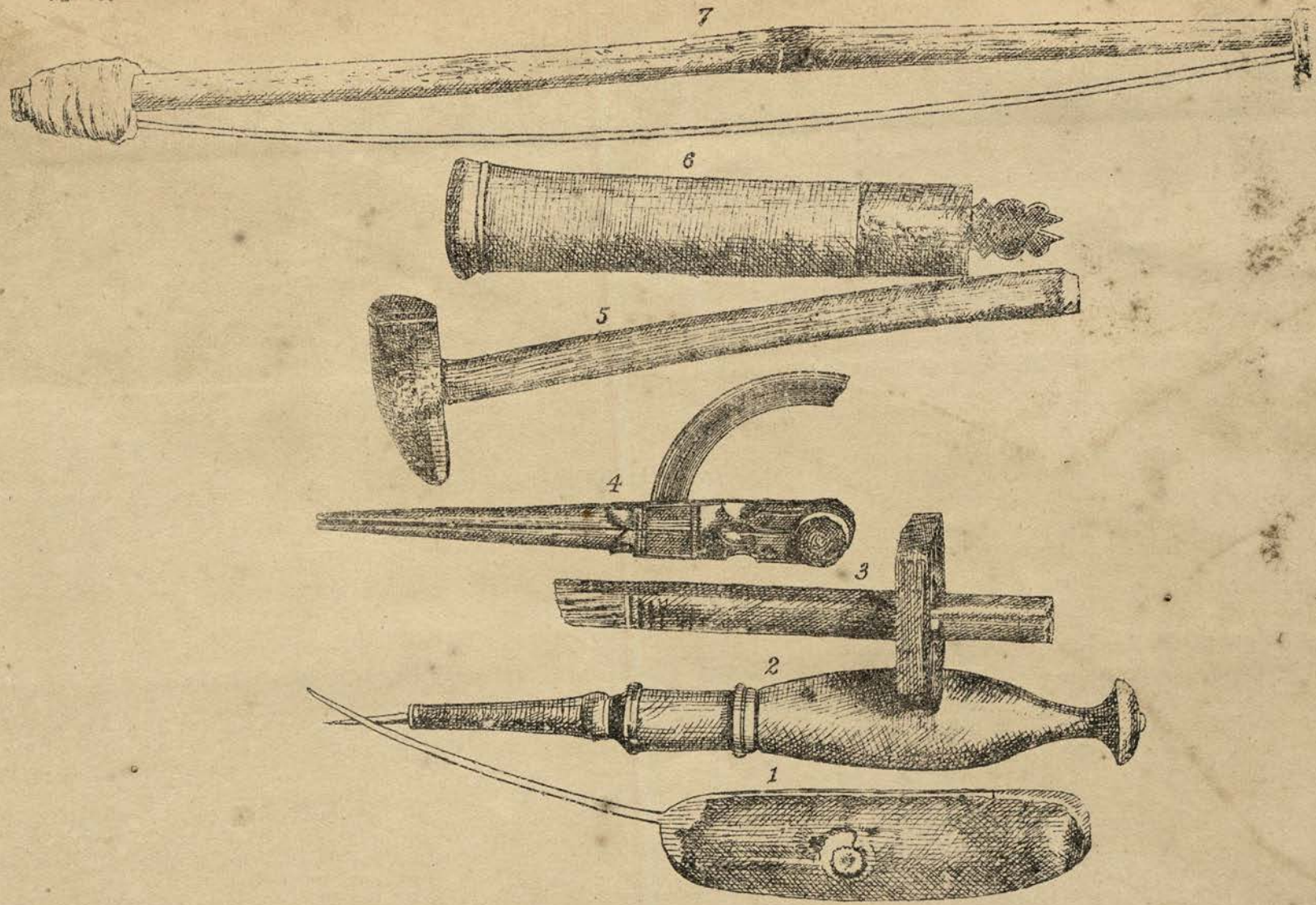
APPENDIX.

LIST OF ILLUSTRATIONS.

Number.

1.—Carver's Tools ... ... (Delhi).
2.—Perforator's Tools ... ... (Amritsar).
3.—Comb-maker's Tools ... ... (Ditto).
4.—Turner's Tools ... ... (Ludhiána).
5.—*Chúrigar's* Tools ... ... (Dera Gházi Khan).
6.—Model of Elephant ... ... (Delhi).
7.—Model of Táj Mahal ... ... (Ditto).
8.—Model of Elephant ... ... (Ditto).
9.—Paper-knife ... ... (Ditto).
10.—Peacock-ship ... ... (Ditto).
11.—Bullock-cart ... ... (Ditto).
12.—Combs and Knives ... ... (Amritsar).
13.—*Surmadánis* and *Chúras* ... ... (Ditto).
14.—Toys ... ... (Ditto).
15.—*Chúrigars* at work ... ... (Ditto).
16.—Furniture ... ... (Hoshiárpur).
17.—Furniture ... ... (Ditto).

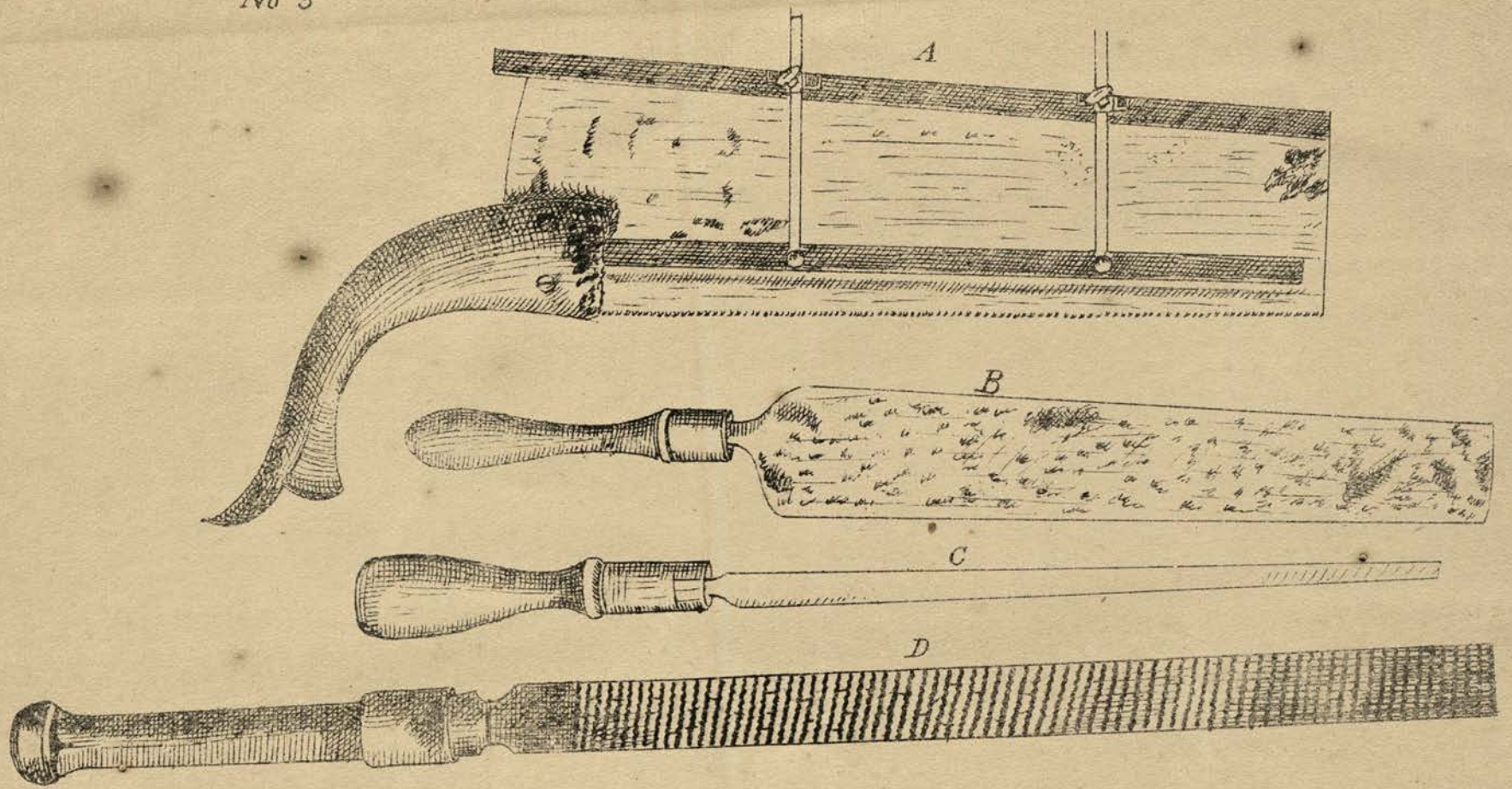
No 2.



TOOLS FOR PERFORATION WORK, &c.

1. RETHI or FILE.
2. DRILL.
3. KATHKASHI.
4. COMPASS.
5. HAMMER.
6. COMPASS.
7. BOW for DRILL.

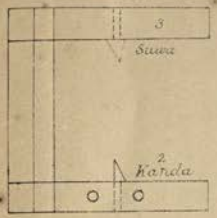
No 3



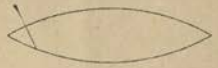
TOOLS USED IN COMB MAKING.

A.—ARI or SAW. B.—PATAL. C.—THASOOL. D.—RETHI.

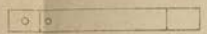
1
Jand



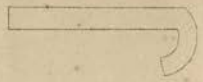
4
Kamana



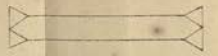
5 18
Sabbal Dhur



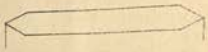
6
Lohe Rachh



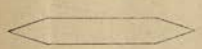
7
Mathnie



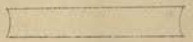
8
Sangarie



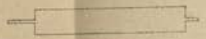
9
Chierra



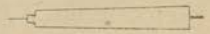
10
Ranpata



11
Kharkie

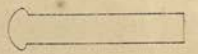


12
Barma

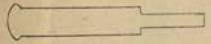


13
Qulbai

14
Bimbia

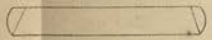


15
Tira



16
Rachhie

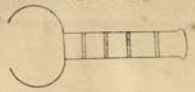
17
Roda



18
Tesha

20
Arie

21
Chharie

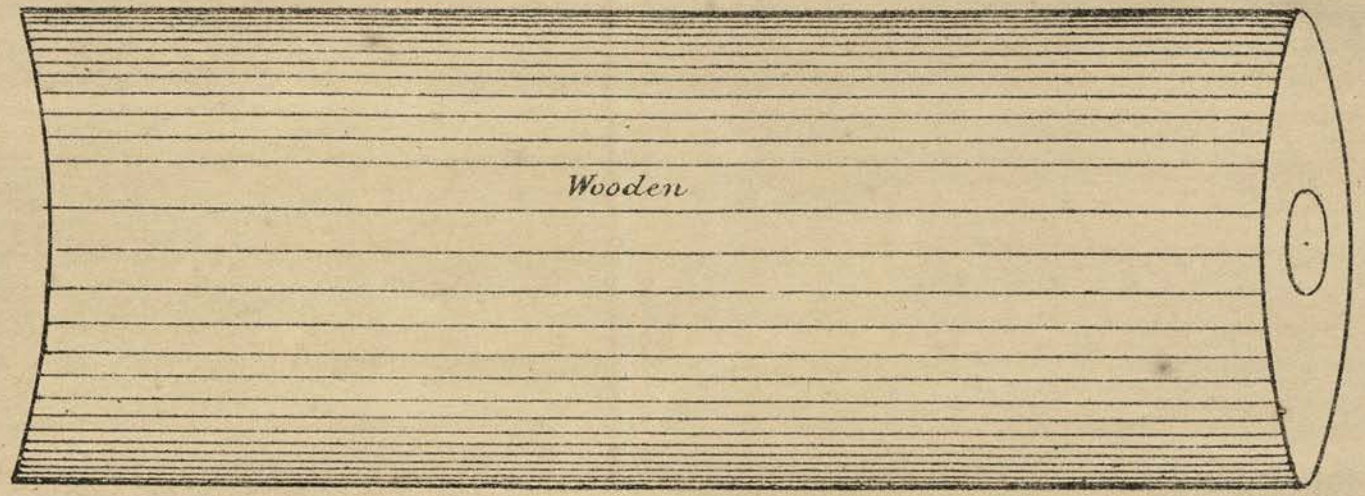


22.
Rati

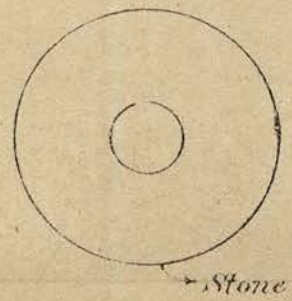
23
Tikera

SANGÁRI

SABNÁ



SARIN



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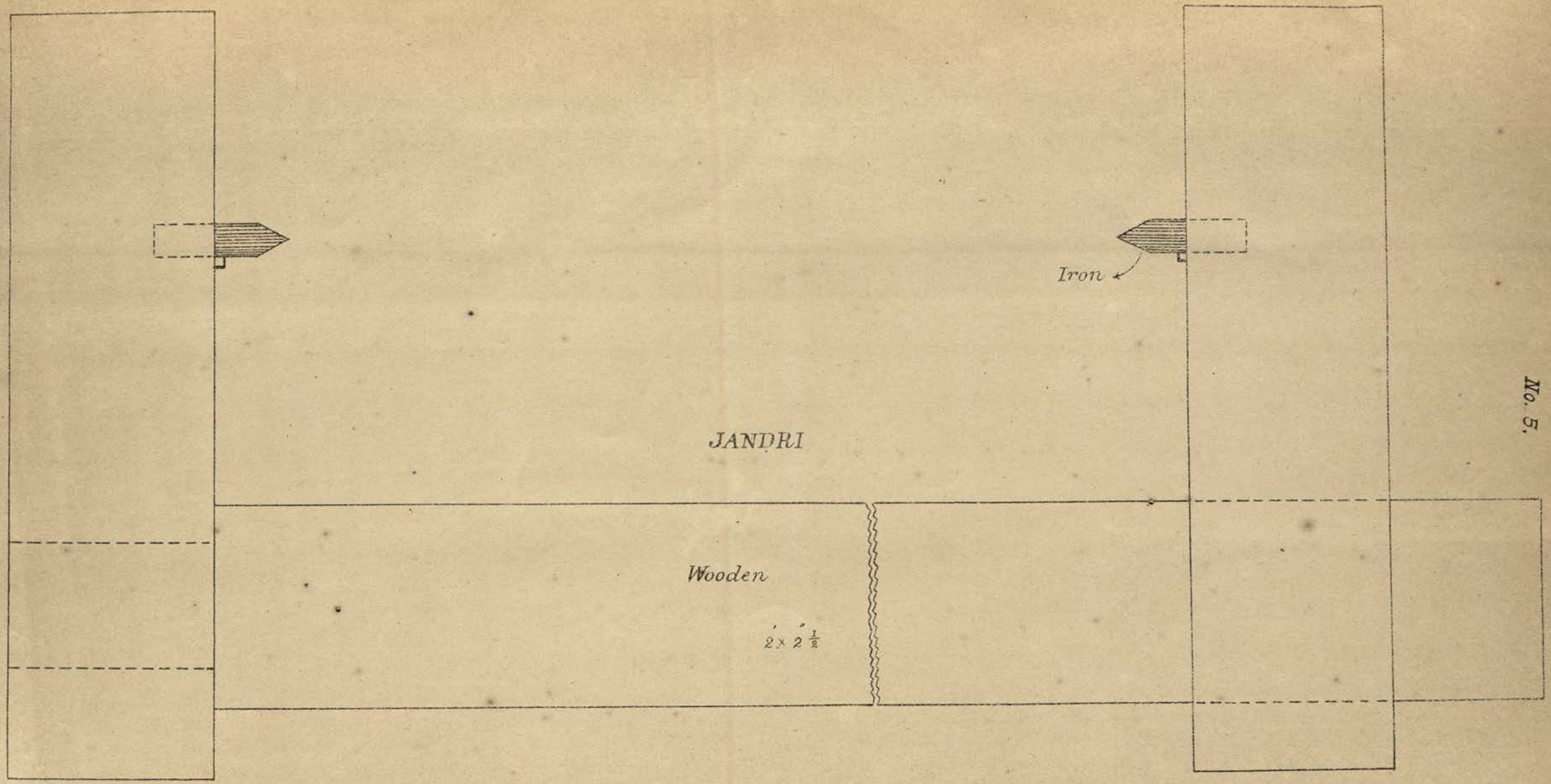

No. 5.

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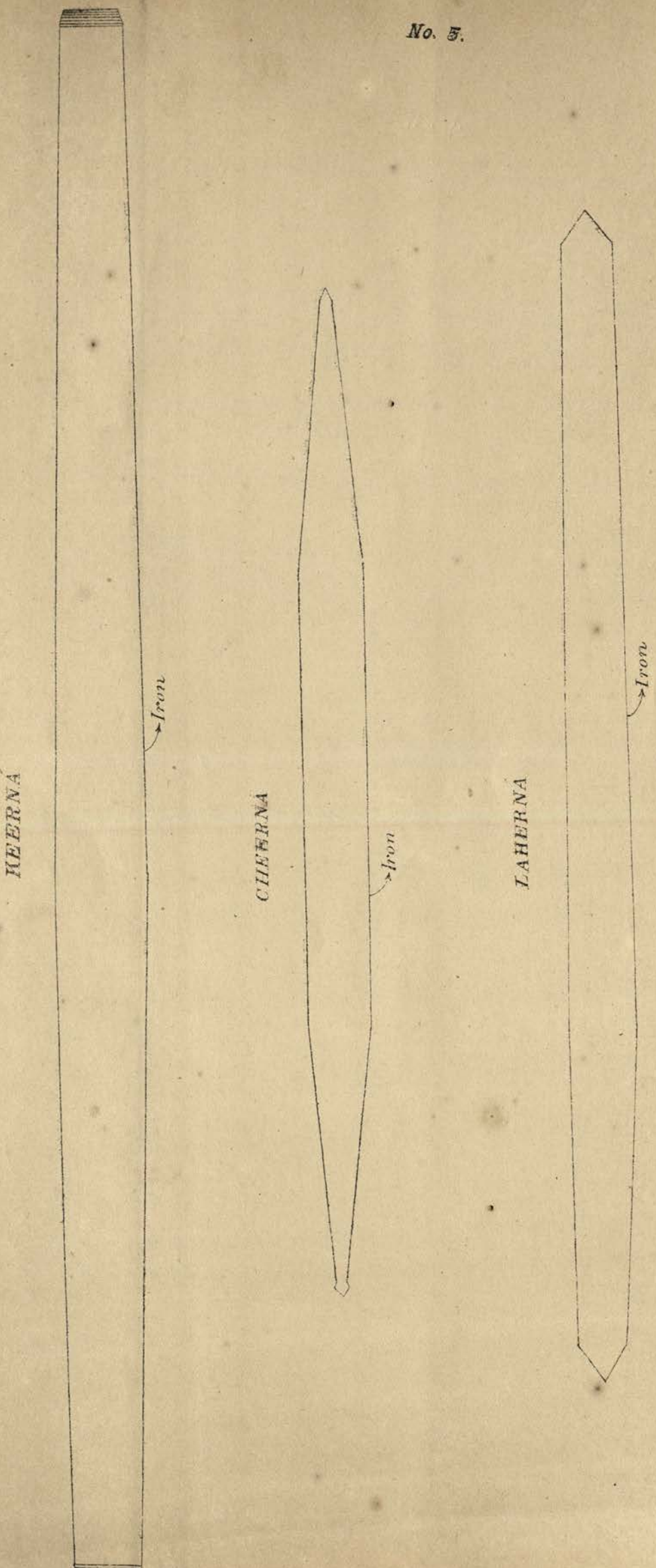
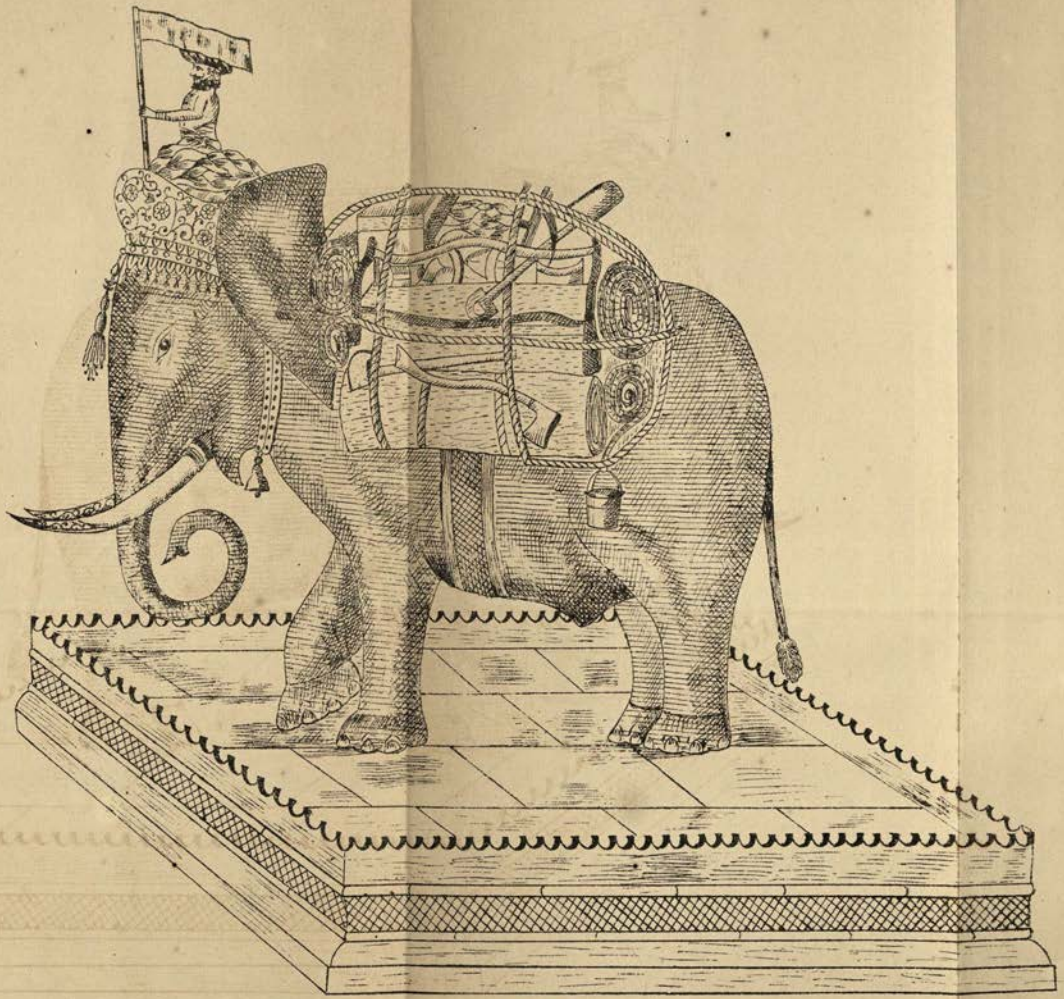
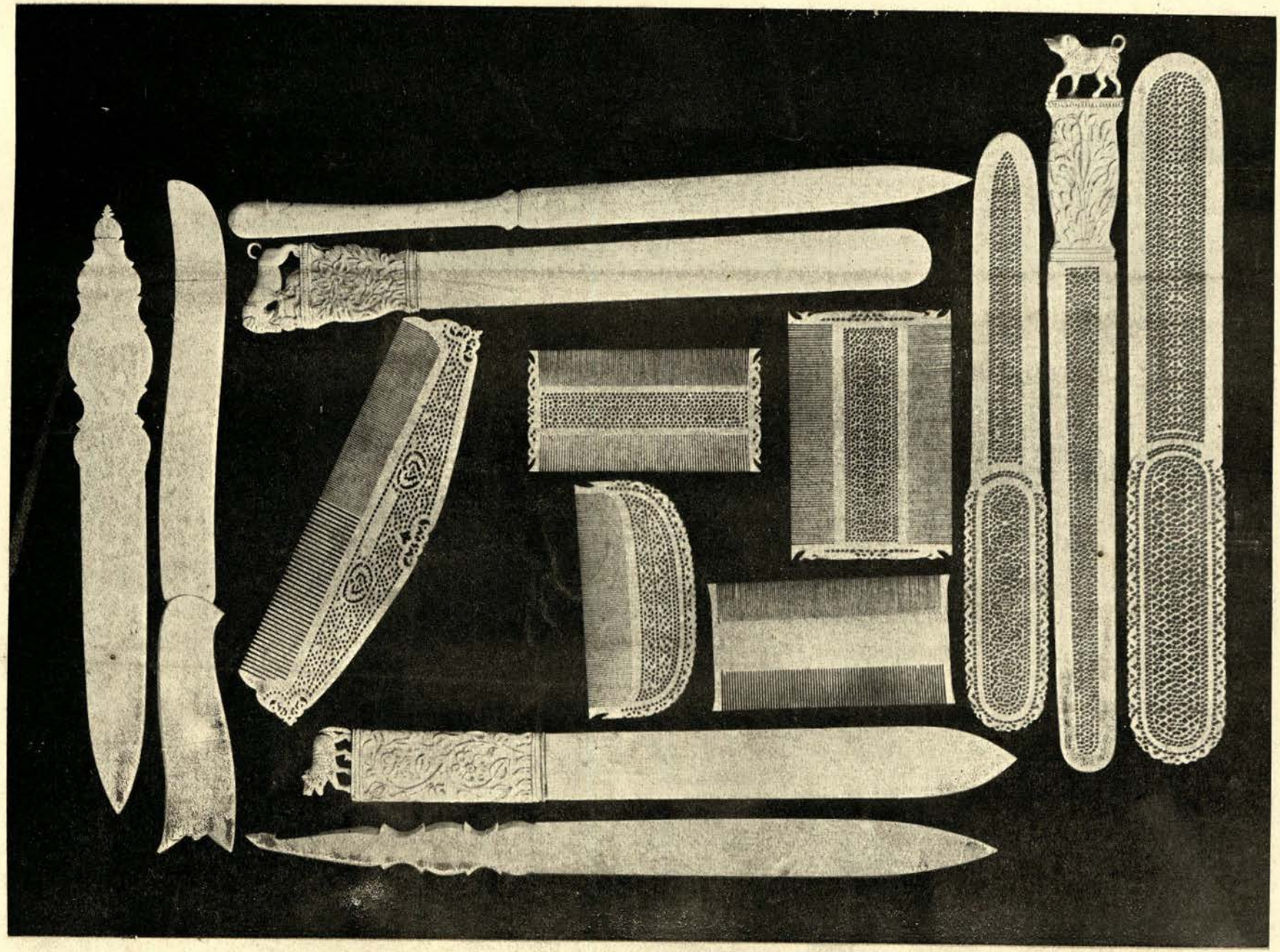


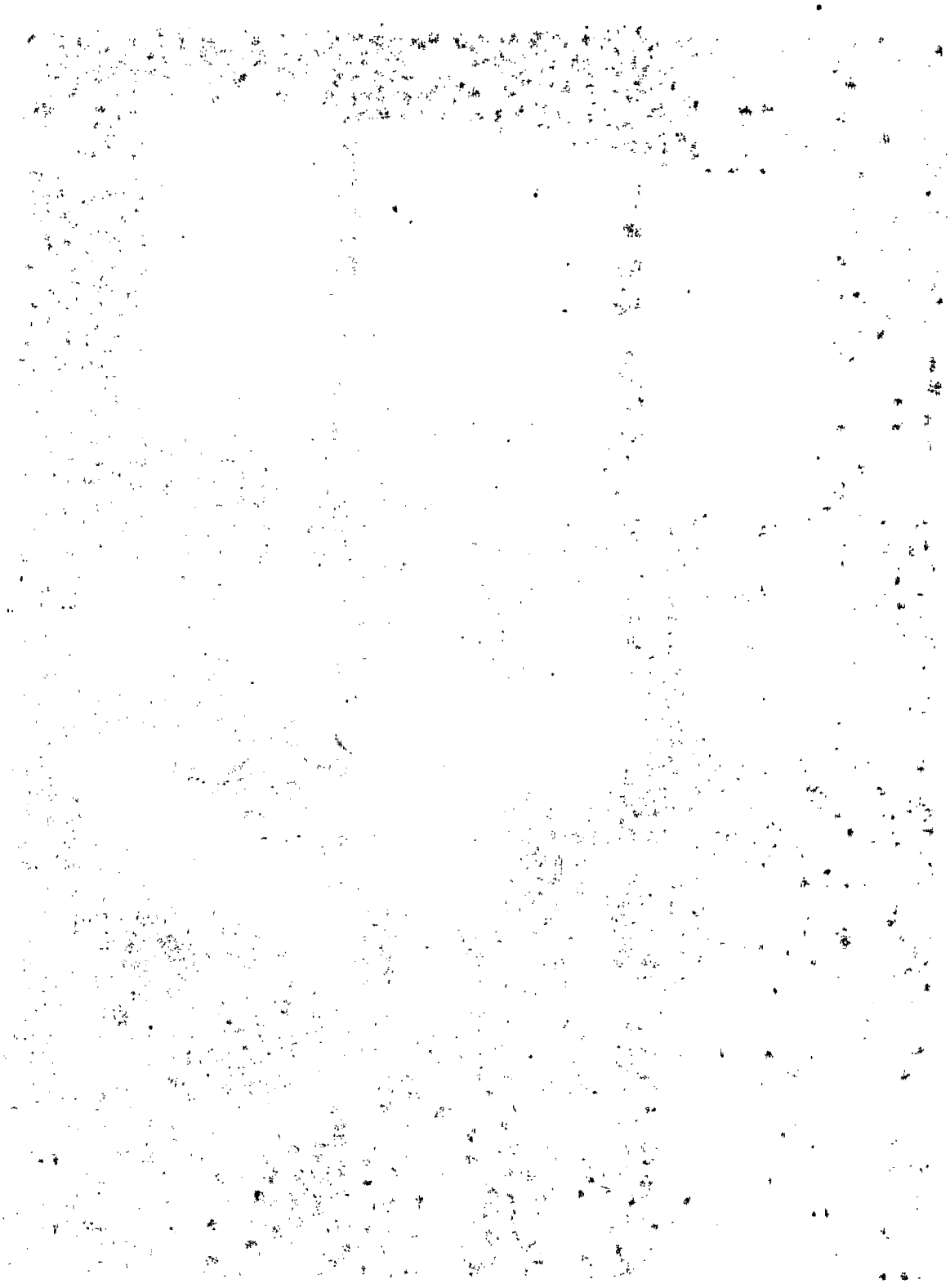


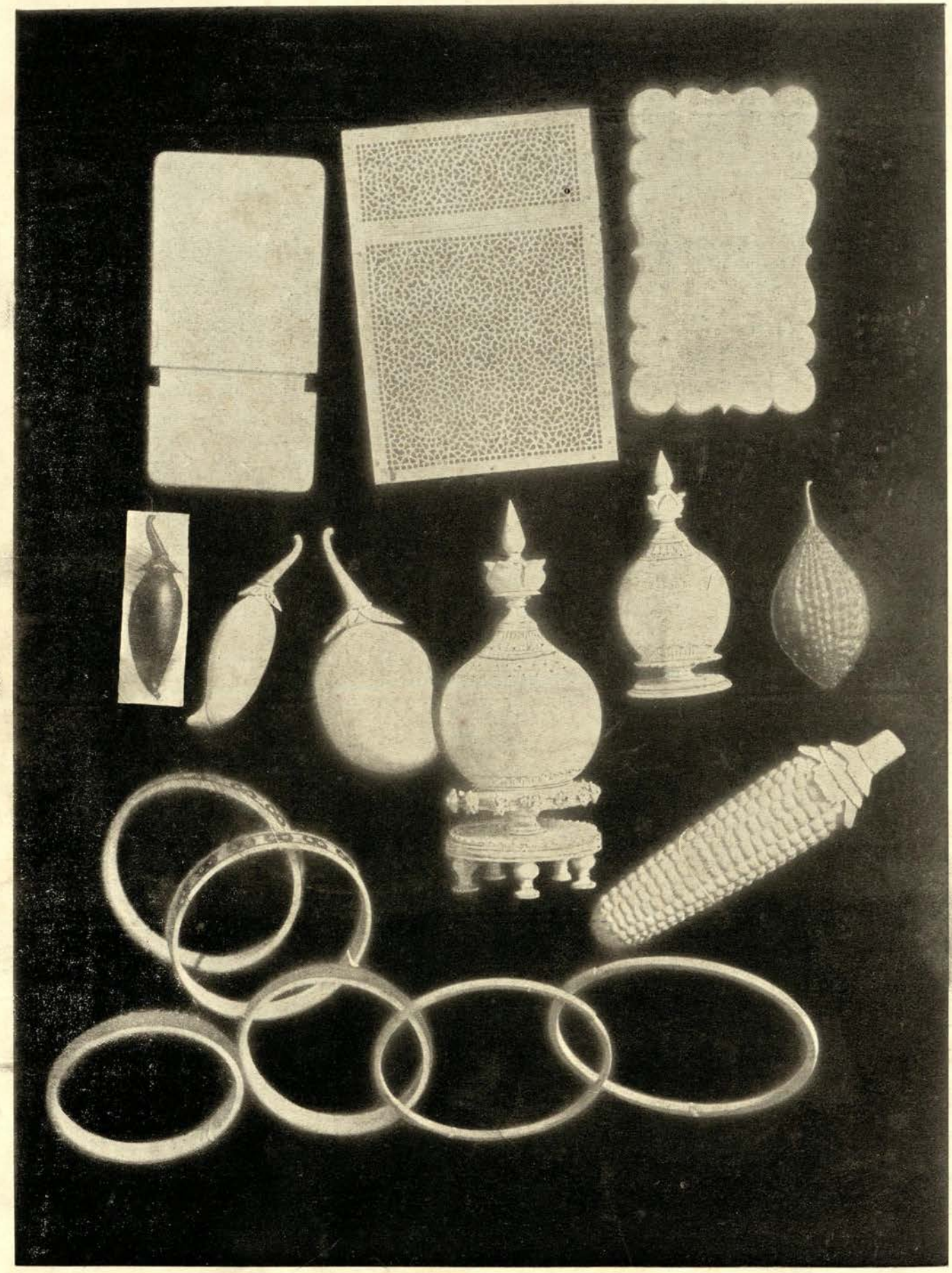
No. VI.

LIBRARY OF THE BOMBAY BRANCH OF THE ROYAL ASIATIC SOCIETY

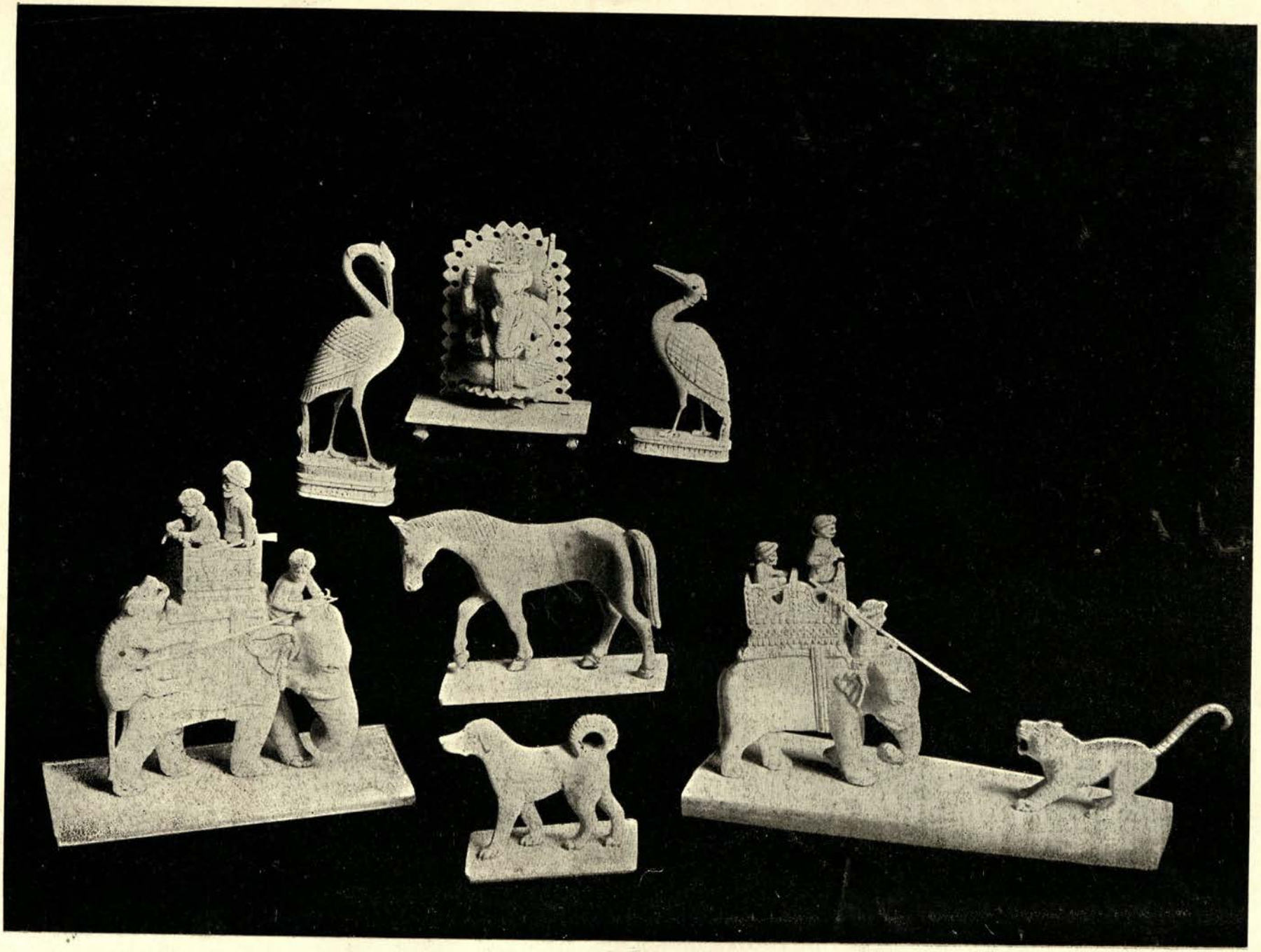


No. 12. COMBS AND KNIVES (AMRITSAR).

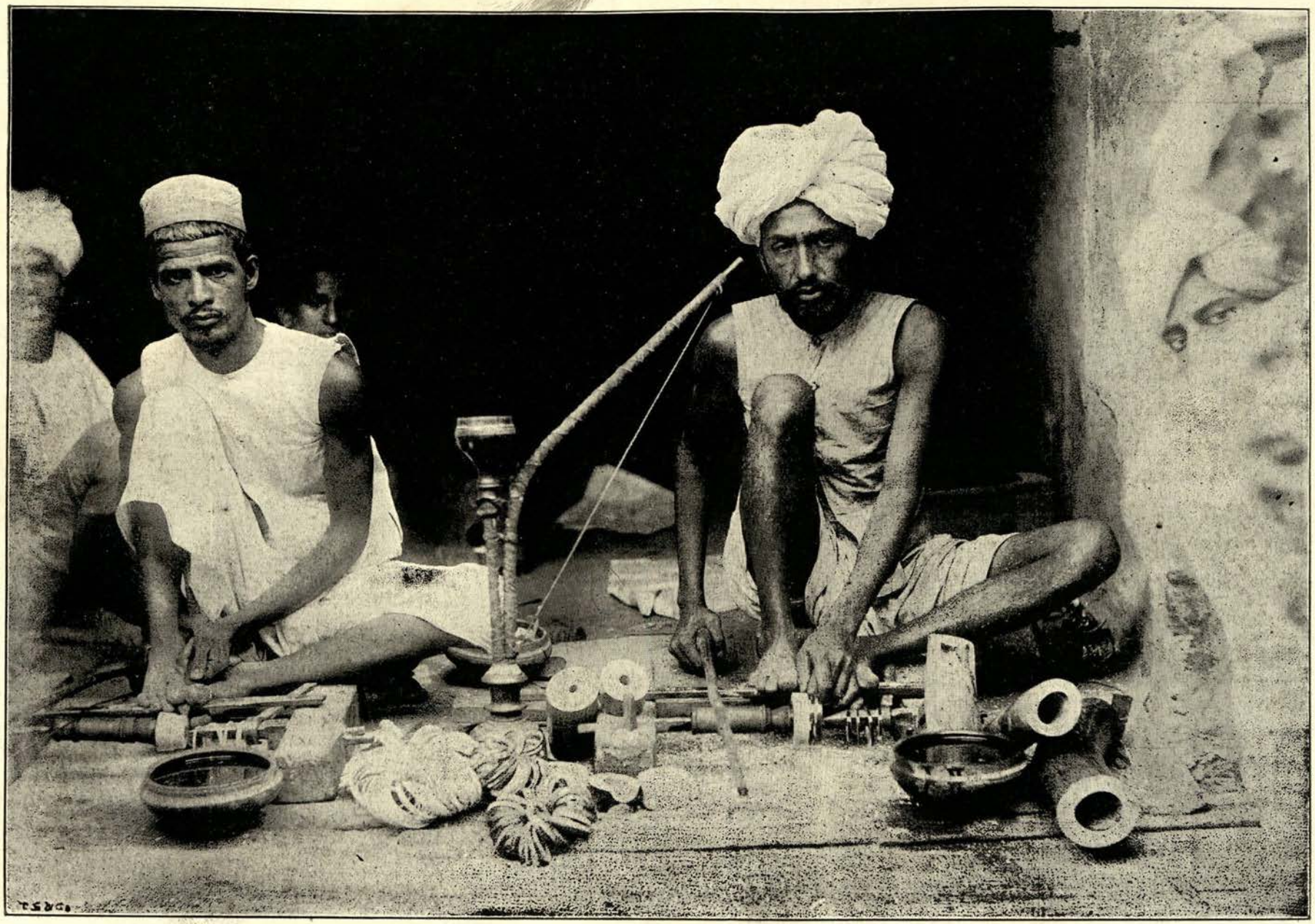




No. 13. SURMADANIS AND CHURAS (AMRITSAR).

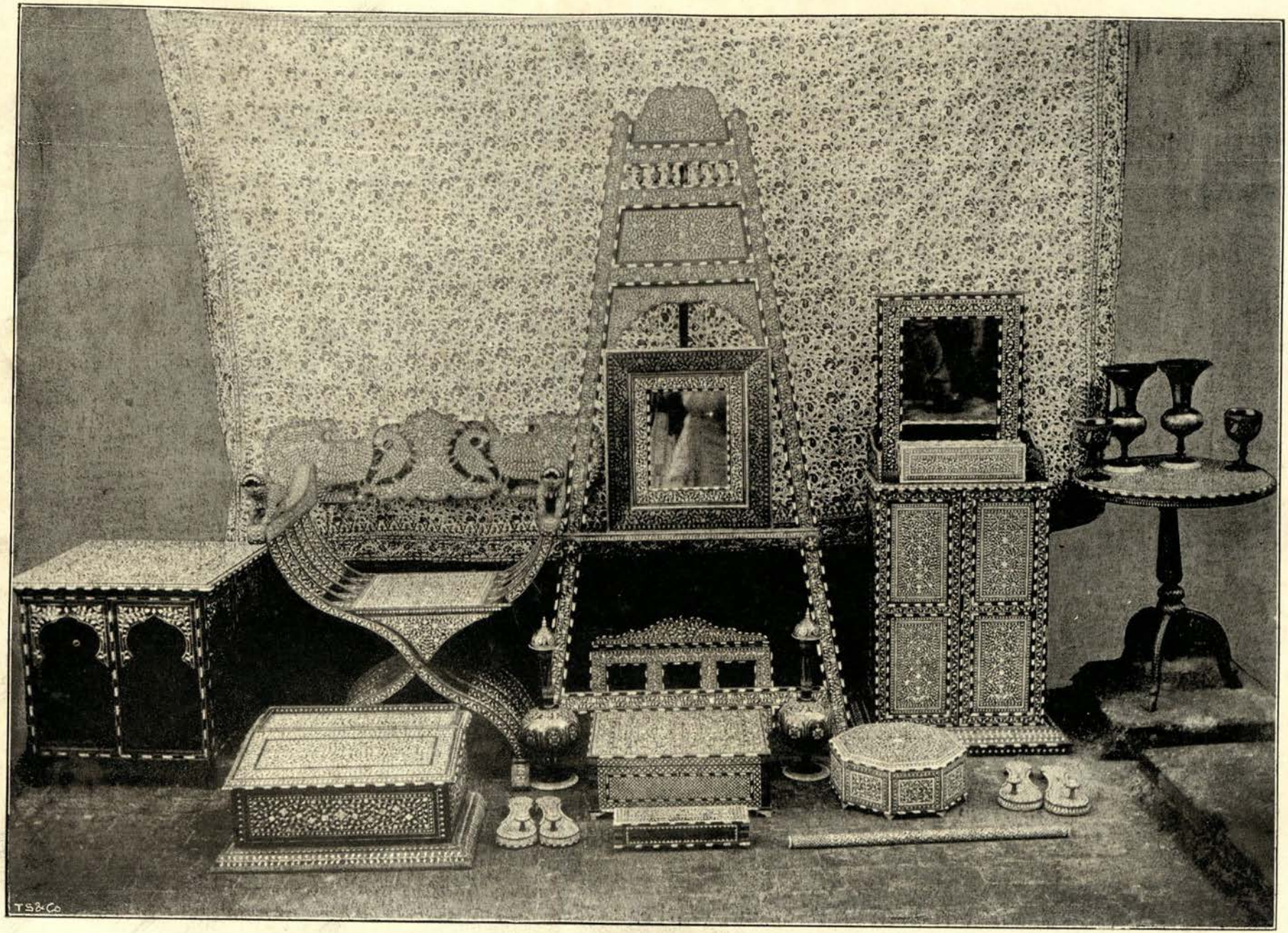


No. 14. TOYS (AMRITSAR).



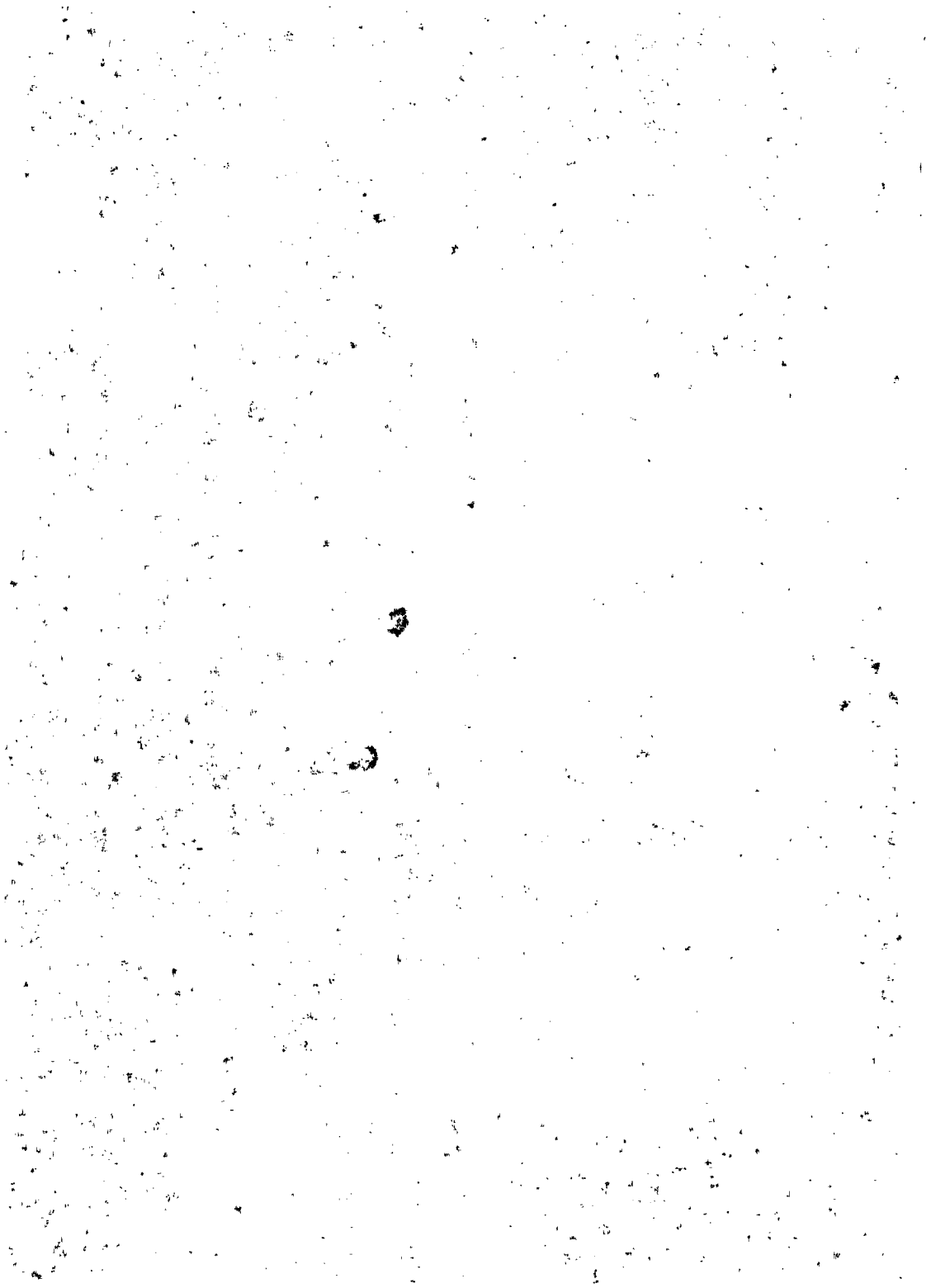
No. 15. CHURIGARS AT WORK (AMRITSAR).

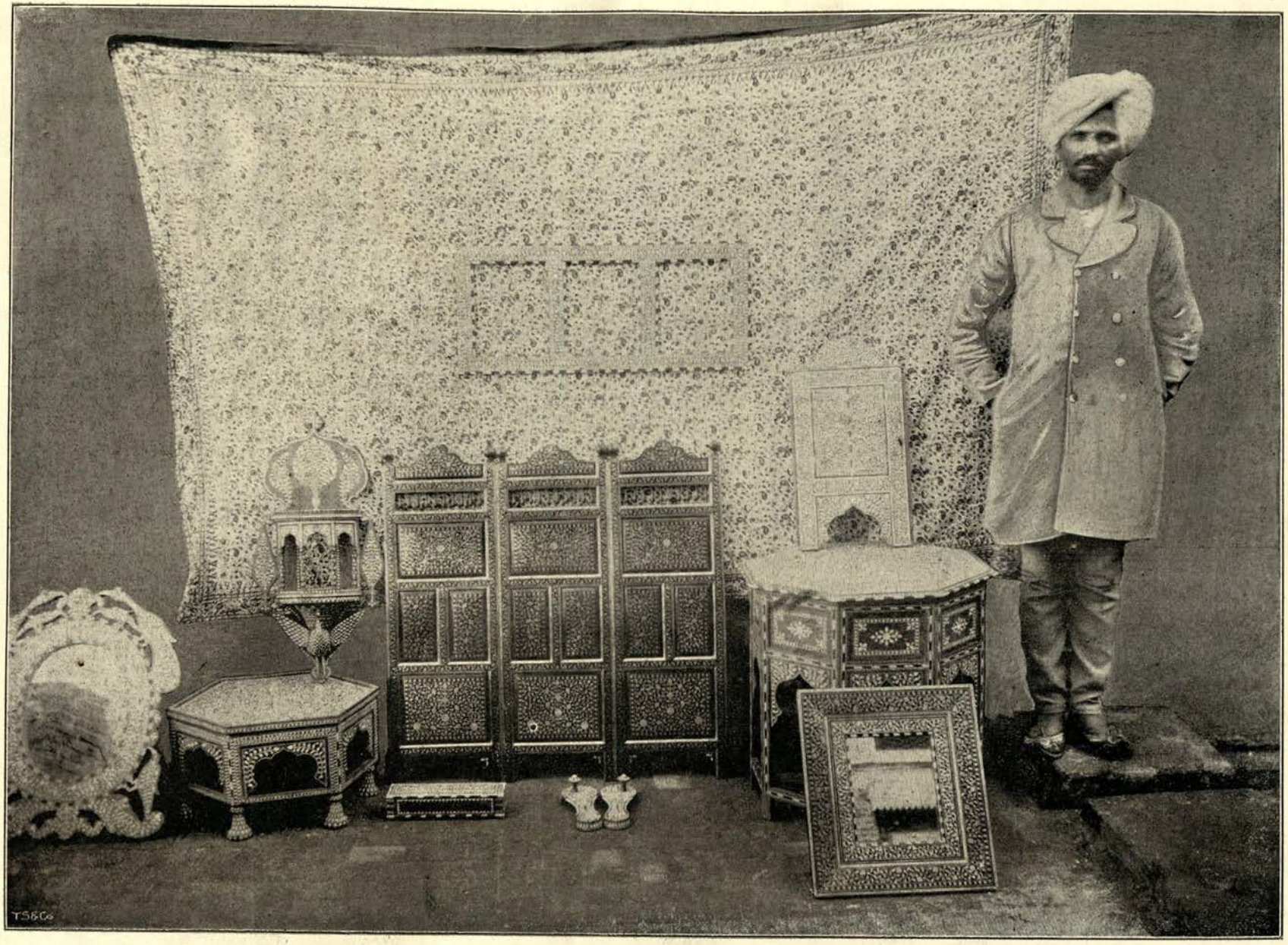
Lathe used by Churigars showing the "Singari" severing the Rings or Churis.



No. 16. FURNITURE (HOSHIARPUR).

Square, Rs. 15. Chair, Rs. 35. Box, Rs. 8. Easel, Rs. 15. Almirah, Rs. 37. Round Box, Rs. 8. Round Table, Rs. 8. Wooden Shoes, Rs. 2 per pair.





No. 17. FURNITURE (HOSHIARPUR).

Bracket, Rs. 11
Chauki, Rs. 15

Screen, Rs. 32

Photo Frame, Rs. 4
Octagonal Table, Rs. 20
Mirror Frame, Rs. 8

MONOGRAPH

ON

PAPER MAKING AND PAPIER MACHÉ

IN THE

PUNJAB,

1907-08.

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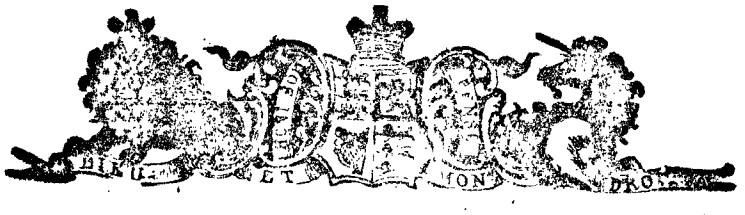

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1908.

MONOGRAPH ON PAPER MAKING AND PAPIER MACHÉ IN THE PUNJAB, 1907-08.

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MONOGRAPH

ON

PAPER MAKING AND PAPIER MACHÉ

IN THE

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PREFATORY NOTE.

As the district reports were somewhat scanty in material I was obliged to go elsewhere for further information, and in particular I have drawn largely from the following sources:—

Sir George Watt	... "Indian Art at Delhi" and "Dictionary of Economic Products."
Mr. Baden Powell	... "Punjab Manufactures."
Messrs. Cross and Bevan	... "Report on Indian Fibres."
Mr. Gee	... "Monograph on Fibrous Manufactures in the Punjab."
Dr. Buhler	... "Indian Palæography."

And a note on paper making in the Himalayas by the late Charles Horne, B.C.S., contained in the Indian Antiquary, Volume VI, 1877.

I am particularly indebted to Mr. Bert de Lamarre, Proprietor of the Ticarigua Factory, Trinidad, B. W. I., for the courtesy in supplying me with information concerning his new process of converting megass into paper, some account of which is given in paragraph 77. A few days before submitting the monograph, an article appeared on the same subject in the *Pioneer*, which referred to the Indian Trade Journal for further information. As I have been unable to secure the Journal in time, I have let my paragraphs on the subject stand for what they are worth.

DALHOUSIE:

Dated 1st September 1908.

H. W. EMERSON.

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No. 8 (Com. & Indy.), dated Lahore, 8th January 1909.

From—W. S. HAMILTON, Esquire, offg. Secretary to Government, Punjab,

To—The Junior Secretary to the Financial Commissioner, Punjab.

WITH reference to the Monograph on "Paper-making and Papier-maché in the Punjab," I am directed to request that the attention of the Director of Agriculture may be invited to the concluding remarks in the monograph as to the value of sugarcane refuse for paper-making.

2. The Lieutenant-Governor would be glad if the Director of Agriculture would ascertain whether any experiments in the way of paper-making with megass have been attempted in the Sujanpur mills where they have or had good machinery for complete extraction of the succrose, an abundant supply of water and a trained chemist. If not, the Director of Agriculture might, I am to say, enquire whether the Manager would be willing to undertake such experiments and under what conditions.

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MONOGRAPH

ON

PAPER MAKING AND PAPIER MACHÉ

IN THE

PUNJAB.

PART I.

CHAPTER I.—PAPIER MACHÉ.

Extent of the industry.

1. In the Punjab Exhibition of 1864, a special class papier maché was constituted solely for the benefit of Kashmir, as the work was then almost peculiar to that country. A few Kashmiri artists have wandered from time to time into India and have brought the knowledge of their art to various centres, none of which, however, are situated in the Punjab. The little papier maché that is made in this province is the work of isolated artisans who produce it on special occasions and not as a regular industry, thus, for instance, there is at Gujranwala a single workman who makes masks of papier maché for the various heroes of the Ramayana of whom the monkey chief, Hanúman, is the most popular, and masks of him are sold freely and used at Dusehra by the actors of the Ram Lila. They are on sale in the bazaar only a few days before the festival, and for the rest of the year the industry remains quiescent. So also in Lahore and other cities, papier maché is said to be made by Muhammadans for the domes of their Tazias at Moharram, but as no mention of such manufactures have been made in the district reports, it is safe to assume that they are on a small scale only and possess no commercial value.

Decline of the industry and the reasons.

2. The making of papier maché, even in Kashmir, is rapidly dying out and the reasons are not far to seek. Srinagar was the one centre where papier maché on a commercial scale was produced by the old school of Kashmiri artists. Heavy taxation was imposed on any outsider, guilds of artisans were sanctioned and protected by the State and most stringent measures were taken to guard the secrets of the art. The removal of taxation was the first blow to the prosperity of the city. Competitors at once rushed in, and there was a consequent relaxation of State supervision over the quality of the new materials and of the finished articles. At the same time the increasing influx of visitors into Kashmir introduced a new set of purchasers who were either not as fastidious as the old Pathan dealers of Kábul in the appreciation of good work, or were unwilling to pay the price for it. Competition is keen, the visitors to the valley demand cheapness and variety, and, as always, the artistic yields to the commercial instinct, with the result that the modern stuff has lost infinitely more in quality than it has gained in variety.

The old and the new patterns.

3. Within the last twenty years new and ever-increasing descriptions of inferior patterns have displaced the beautiful forms of the old school.

These old patterns were few in number, but were distinctive, those chiefly employed being the minute rose, the Yarkand and the pale coloured shawl forms.

The first-named consisted of bunches of small red roses and birds clustered gracefully together in accordance with some definite scheme of colour and design. The modern rose pattern consists of separate sprays of flowers—

frequently unknown to the Kashmiris—scattered here and there over the surface with no apparent purpose but to display their wealth of colour.

The Yarkand pattern has a dark back ground with gold rosette arranged in a spiral and emanating from separate centres all over the surface; whilst on the tops of the golden foliage white flowers are drawn.

As its name implies the shawl design is a copy of the curved designs seen on shawls and is painted on a white back ground.

So completely have these old forms fallen out of fashion that Sir Geo. Watt, writing in 1903, asserted that if ever Kashmir thinks of reviving its former beautiful art of papier maché it will have to go to the museums of Europe and America for the most desirable models.

Change in the nature of the work.

4. Unfortunately the deterioration has not only been in the patterns employed, but the whole nature of the papier maché work has changed.

The industry has in fact passed through three distinct stages, namely, the first period where papier maché goods were actually made from the paper pulp, the second period when the old patterns were preserved, but a thin layer of pulp was used as a coating for wooden articles, and lastly the present stage in which papier maché is merely a name descriptive of a particular kind of painted and varnished wood-work. The substitution of wood for paper pulp as a means of cheapening the cost of production was already well established at the time of the Punjab Exhibition of 1864, and the practice has steadily developed ever since.

Results of the change.

5. The result is that only those articles are produced which can readily and cheaply be fashioned out of wood; surahis, many cornered trays and vessels of quaint shape have been displaced by flat goods, such as cigar cases, picture frames and screens, and in fact almost the only article now made in Srinagar purely of papier maché is the pen-holder, and even it has its cheaper counterpart in wood.

Local name for industry.

6. The pen-case-work was the first, as it is the last, form for genuine papier maché, and hence the name *kar-i-kalamdán* by which the industry is generally known in Kashmir.

Process of manufacture.

7. There are two distinct processes in the manufacture of papier maché, neither of which correspond exactly to the western method.

In the first, the paper is merely softened so as to admit the cohesion of the different sheets in layers; in the second, the paper is reduced to a paste; sometimes the two processes are combined.

In the former method sheets of coarse paper are saturated with flour and gum and then pasted together layer upon layer on a mould, until by repeated slow drying the article attains the desired shape. When moist, it is wrapped round with a thin muslin rag and covered with a layer of dressing material consisting of whitening mixed with glue and similar in appearance to plaster of Paris, after which a uniform surface is obtained by rubbing and smoothing with pumice stone or sand paper.

The required ground colour (zamin), usually white, is then imparted, and when dry the article is ready for ornamentation. The pattern is painted in water colours with a fine brush, and when properly set is glazed with a pure transparent varnish made from copal (ver. sundras) dissolved in turpentine.

The latter method is the one employed in Gujranwala, where strips of coarse waste paper are soaked in water for about three days and reduced to a pulp. A glutinous substance is then mixed with it until it is reduced to the consistency of a paste and capable of being moulded into any shape required. The dressing material used is a mixture of glue and chalk or of glue and powdered brick, but if the latter is used the material will have to be further

smoothened with sand paper. The ground colouring and the ornamentation are done exactly as in the first process, but the varnish used for the final coating is made of resin boiled with either turpentine or linseed in equal quantities.

Permanence of the work.

8. The surface prepared from the above processes is unaffected by heat and moisture, but the ground is usually white or light coloured and darkens with age. Moreover the bright colours used in the ornamentation after a time lose all their brilliancy, so that the life of good papier maché work is comparatively short.

PART II.—PAPER MAKING.

CHAPTER I.—THE HISTORY OF PAPER AND PAPER MAKING IN THE PUNJAB.

Early writing materials.

9. The earliest Indian writing materials approaching paper in description of which we have any information are the tender inner bark of trees and well-beaten cloth.

Cotton cloth. Strabo XV, 717.

10. The latter is mentioned by Neárchos in a passage referring to the last quarter of the 4th century B. C. as a material used by the Hindus for letter writing. There is no evidence to show that this description of writing material was ever in common use in the Punjab, and it seems only to have survived in the account books made of a kind of cloth, used by the Kanarese traders. The cloth is beaten, covered with a paste of tamarind seeds and then blackened with charcoal.

The inner bark of trees.

11. More interesting is the note by Q. Curtius to the effect that at the time of Alexander's invasion the bark of trees was in general use as a writing material. There is little doubt that the reference is to the inner bark of the bhurja or Indian birch tree (baetula bhojpattr) which grows freely on the Himalayas and which, until quite recently, was used as paper in some of the Hill States, and is still popular as a material on which to write charms. So general was its use in Northern India both amongst Buddhists and Hindus that it acquired the specific name "lekhana"—the writing material—whilst written documents themselves were called bhurja from the name of the tree whence their materials were derived.

Pieces one ell in length and one span in breadth were prepared for use by first rubbing them with oil and then polishing them. This process differs from that employed in the Himalayas for the barks of various trees now used as paper materials, and the art of the preparation seems to have been lost in Kashmir when a more convenient writing material in the form of paper proper was introduced there during the Moghal period. The latest birch manuscript is over 200 years old, and the Pandits have struggled in vain to rediscover the secrets of the old method.

The use of bhojpattr spread rapidly from the north-west until it became the general vehicle for letter writing in Northern, Eastern, and Central India.

The oldest known documents on bhurja are the Kharosthi Dhanmapada from Khotan and the inscribed twists discovered by Masson in the stupas of Afghanistan. The inscriptions are written in the Kharosthi script, an ephemeral alphabet, in use in the country embracing modern Eastern Afghanistan and the Northern Punjab, most probably from the 4th century B. C. to the 3rd century A. D. The birch bark manuscripts from Kashmir now in the libraries of Poona, Oxford, London and Vienna probably do not date earlier than the 15th century.

Palm leaves once used in the Punjab.

12. Intermediate between the above two groups are manuscripts of bhojpattr cut in the form of palm leaves, one proof amongst many that the use of these leaves as a writing material extended from the south to the north-west. A copper-plate not later than the 1st century A. D. cut in the

same shape has been found in the Punjab, and we can safely assume that the birch bark and the palm leaf existed side by side for some centuries as writing materials in this Province.

It is interesting to note that the processes of boiling, soaking, washing and polishing which now form important stages in paper making were all employed in the ancient preparation of palm leaves, so that the methods, when introduced by the Moghals into India, were by no means new, the innovation being in the use of new materials.

Introduction of paper proper by the Muhammadans.

13. The Muhammadans learnt the methods of paper making in Central Asia from the Chinese, and almost certainly introduced them into India on their first invasions.

The oldest paper Manuscript found in India dates from the 1st quarter of the 13th Century A D.; older Manuscripts than this have been found in Kashgar, but they were most probably made and written in Central Asia, whilst the oldest Sanskrit Manuscripts from Kashmir and Nepaul show unmistakable evidence of having been written under Chinese influence.

Native historians are silent on the subject as to when and by whom the art of paper making was brought into India. We can, however, fix the lower limit at the middle of the 10th century, as extraneous evidence proves that paper making from rags was non-existent in India before the invasion of the Moghals.

Evidence showing that the Hindus did not practice the methods of paper making.

14. As early as the 2nd century A. D. paper making from cotton was a flourishing industry in China, between which country and India there had been for some time commercial intercourse, which was continued *viâ* Egypt to Europe. In spite of this, however, paper making from cotton was not known in Europe until the 9th century, when it was introduced into the southern countries by the Arabs who had learnt the methods, not from the Hindus but from the Muhammadans, whom they met and conquered in Bokhara, where at Samarkhand, it is recorded, they found a large manufactory and learnt its processes.

This evidence seems to prove conclusively two points: first, that the Hindus must have heard of the Chinese methods, but failed to adopt them, and, secondly, that the Muhammadans of Central Asia had at an early date learnt the process from their more eastern neighbours. Had the industry been practised by the Hindus, it is certain that the intimate intercourse existing between them and the people of Europe would have led to its introduction into the west.

Influence of caste prejudices.

15. Caste prejudices in fact interposed for centuries as an impassable barrier to the progress of the knowledge from China to Europe, and ultimately it had to find for itself a new route *viâ* the Muhammadan countries of Central Asia.

That religious scruples, and not ignorance, prevented the Hindus from adopting Chinese methods seems to me to be proved beyond question in another way. In Nepaul, as also in some of the small Punjab Hill States, an excellent paper is made from the inner bark of trees belonging to the Daphne family. The first process in the manufacture is the boiling of strips of bark in a strong alkaline solution obtained by passing water through the ashes of oak wood, and exactly the same method was used by the Japanese and Chinese in making paper from the inner bark of the paper mulberry tree (broussonetia papyrifera).

The coincidence is too striking to be accidental, and as the Nepaul method was practised long before the Muhammadan invasions, it is clear that at an early date this particular Chinese method was introduced into India, most probably *viâ* Lhassa. There can be only one reason why the Hindus did not adopt the second and more satisfactory method, and that is because they would have nothing to do with an industry which depended for its resources upon rags and waste, worn and handled by men of all castes.

16. From what has been written above it may be safely assumed that paper making was introduced by the Moslems on or soon after the invasion of *Mahmud of Ghazni in the 10th century.*

Date of the introduction of paper into India.

17. The process has remained practically unaltered from its first entry until the present day, and paper rapidly displaced birch bark as the universal writing material. The reason generally given is that the supply of bhójpattr began to run short, but this does not seem to be the case, and the Himalayas have, in fact, an almost inexhaustible stock of birch bark. Dr. Bühler writing in 1875 says that in one single day he counted 14 large barges laden with birch bark, being brought into Srinagar, whilst in Kulu and Chamba it is still used for umbrella coverings, for packing purposes, and even for lining the roofs of houses, large quantities being in addition exported to the plains where it is used in the manufacture of the flexible stems of hookas. The truth is that both dry and damp heat proved fatal to birch bark manuscripts, the former causing them to crack, split, and peel in all directions, whilst the latter produced a collection of fungi on the material, so that as soon as the superiority of paper became known, it was at once adopted as the general writing material.

Subsequent history.

The excellence of paper depends largely upon the quantity and clearness of the water available for washing the pulp, so that it is not surprising to find that Muhammadan paper makers colonised in those parts where the natural conditions were most favourable for their work.

Thus Kashmir became famous for its paper and was followed closely by Sialkot.

18. There is general agreement that Akbar, in the conquest of the valley introduced the manufacture of paper into Kashmir, but the subsequent history of its progress is singularly obscure, due to the fact that communication between the makers and the Punjab was in the past rigorously forbidden, and they were allowed to leave their territory only if they bound themselves to silence under the severest penalties. The superiority of Kashmir paper however is undoubtedly due to the natural water supply and to the use of mills worked by streams, such as existed at Faviano in the Picenum and at Culle in Tuscany, the paper of which places received the highest awards at the English Exhibition of 1851.

Adoption in Kashmir.

19. So also for Sialkot, the original settler, whose name and date are veiled in obscurity, was undoubtedly persuaded by the quality of the water of the hill torrent Aik to settle on its banks, and there the centres of the industry are still situated. Excavations and ruins prove that the old manufactories were of considerable extent and the tradition of their spread is a curious one. Some six and-a-half centuries ago, so runs the tale, there came a master in the art, who, whilst employing the common people to beat the pulp guarded jealously the more intimate secrets of his trade and particularly the knowledge of the peculiar knack by which the pulp was lifted in the frames from the water vats. Good reason he had to keep the monoply for himself, for a single sheet he valued at the then current rupee. Alas, however, he was cherishing a viper in his bosom and "one low churl compact of thankless earth," in the person of his son-in-law, peeped through the chinks of his holy-of-holies and learnt the mysteries of the art. Worse still, he had not the caution of his father-in-law, but noised his discoveries abroad, after which the industry became widespread, and a single sheet no longer sold at one rupee.

Sialkot paper making.

The paper of finest quality manufactured there is known as Jehangiri after the Mogul Emperor, who is supposed on a visit to the place to have ordered a superior kind for the use of his court. It is lighter in weight than the common descriptions of native paper and used for sanads, manuscripts of the Koran and for the pothis of the Hindus. In the time of the Emperors the paper was in general use at the Imperial Capital and the annual proceeds are said to have amounted to 8 lakhs.

During the Sikh rule the industry declined to 20 factories with a sale of Rs. 25,000. But after the acquisition of the Punjab, it increased with the added security of life and property, and in 1855 there were 83 factories employing over 900 men and yielding an income of about Rs. 60,000.

Spread of the industry.

20. Before this, however, paper makers had scattered and carried the knowledge of their craft to other districts. In Multan a strong colony had established itself at Jalalpur Pirwala; at Delhi a separate mohalla was set aside for the paper makers, whilst at Lahore there was at one time as many as 59 private works.

State of the trade in 1881 and 1882.

21. Statistics are only available from the various gazetteers, but as the figures given in them were derived from the internal trade reports, 1881-82, it is possible to see at a glance, in the annexed table, the condition of the industry, at a time when it had reached high water mark in the province :—

District.	No. of works.	Men employed.	Annual output.
			Rs.
1. Sialkot	170	1,091	62,134
2. Lahore	59	200	26,601
3. Delhi	8	155	12,948
4. Multan	52	317	8,071
5. Ludhiana	1	83	6,509
6. Gujranwala	6	20	5,204
7. Jhang	5	64	5,182
8. Montgomery	1	81	3,702
9. Ambala	3	84	3,680
10. Hissar	1	24	2,544
11. Ferozepore	11	55	2,379
12. Dera Ghazi Khan	13	31	2,300
13. Muzaffargarh	3	3	584
14. Gujrat	1	6	542
Total ...	334	2,214	1,42,380

Causes of its decline.

22. Two causes combined to practically put an end to the industry in all districts where it was not firmly established and to cripple it even in its chief centres. These were the general extension of paper making in the jails of the province and the establishment in India of paper mills on a large scale.

Jail manufactories.

23. Paper making has always been one of the chief manufactures in Government jails, but it was not till about 1870 that the matter was taken up very seriously. Increased attention was paid to the subject, the quality of the paper was improved and experiments were made in the use of various fibres. The competition moreover was not a fair one, for the restrictive use of jail-made paper for vernacular writing, was ordered in all public offices, whilst rewards given were for the best qualities turned out. It is true that with the idea of preventing under competition of convict with free labour, the rates were fixed generally higher than those at which country paper could be procured in the open market, but as the chief source of demand had been taken away from the native industry, it was but a poor consolation to the paper makers to know that artificial prices had been imposed.

As early as 1882 Mr. Lockwood Kipling expressed himself strongly on the subject.

"The competition of jails", he wrote, "none of which with all their resources have greatly improved on the best Sialkot stuff has had an injurious effect on the manufacture..... District Officers have frequently had occasion to complain of the quality of the article they were compelled to buy alleging that they could be bettered and more cheaply served in the open market."

As a criticism of the quality of papers turned out by the jails this passage is no longer applicable, but it shows that the Government policy of creating a monoply for itself with regard to a large portion of the native trade, very soon had a bad effect on the industry as a whole.

Opening of paper mills.

24. More injurious still was the establishment of paper mills, worked on western lines, in India. As early as 1825 Mr. Marsham of Serampur imported a self-acting cylindrical paper machine, but his experiment does not seem to have met with great success.

About 1880, however, paper mill began to be opened at various large centres, such as Lucknow, Gwalior and Calcutta, and in 1903 there were nine mills in India employing 4,500 persons and producing each year nearly 44 million lbs. of paper valued at 59 lakhs. These figures are a sufficient commentary on the progress western methods have made, and modern paper mills are rapidly displacing old native manufactories. At Muttra, formerly a great centre for the supply of native paper, the local manufacturers have for years obtained their paper ready-made from the mills in an unsized state which they size, polish, and then sell as native paper.

Rapid decline in the Punjab.

25. In the Punjab the deterioration of the indigenous industry has been so rapid, that any account of paper making, as it now exists, must be in the nature of a memorial of its vanished greatness, for there are, at the present time, only a few private factories which deserve mention.

CHAPTER II.—EXTENT OF THE INDUSTRY.

Jail manufactures.

26. Paper making from the simplicity of its various processes affords the jail authorities a means of employing on suitable work a large number of able-bodied prisoners. It is therefore natural that the industry should be carried on in practically all the district and central jails in the province.

The Sialkot industry.

27. As regards the purely native industry Sialkot is still the chief centre, and until a few years ago the manufacture was carried on in three villages close to the city and situated on the hill torrent Aik. Of these Hirapur has ceased to be a centre, and paper is now made only in Rangpura and Nekapura.

The following rough table will show how the industry has deteriorated during the last twenty years until it has reached its present insignificant proportions :—

Year.	Number of factories.	Number of jandars.	Men employed.	Value of paper made.
				Rs.
1855	82	226	921	60,134
1881	170	...	1,091	62,134
1890	...	117	370	32,620
1907	28	...	56	8,000

Of the 28 factories now working 15 are situated in Rangpura and the remainder in Nekapura.

Jalalpur Pirwala.

28. The only other centre of paper making worthy of the name is Jalalpur Pirwala in the Lodhran tahsil of the Multan district. The industry was once extensive, the paper being largely used in Government offices and also exported to Bahawalpur and Dera Ismail Khan. In 1881 there were 52 private works employing over 300 men and yielding an income of Rs. 8,071 per

annum. Ten years later there were seven shops yielding an outturn estimated at Rs. 840 per annum. There are now five factories only employing some 30 men and yielding about Rs. 600 income.

Multan city.

29. In Multan city itself there are 4 families who carry on the manufacture as a household industry. The paper is very coarse and unfit for anything but packing purposes.

Delhi.

30. In pre-mutiny days paper making was so considerable an industry in Delhi that there existed a particular quarter occupied by paper makers and called the Kaghazi Mohalla. In 1857 it was destroyed, and a few surviving paper makers removed to Kadam Sharif and the gardens of Jauris close to the Jumna. The industry has, however, been dying out for some time ; the works at Kadam Sharif have stopped, and there are now only three private works in the Jauris gardens. The owners are all Shekhs, and about 15 or 20 men and women are employed in the work. The paper is mainly used for banias' bahis, and for packing purposes.

Gurgaon.

31. The report from Gurgaon gives an account of a basket making industry in which paper is employed. Old rags and waste paper are soaked, pounded and then mixed with a kind of clay (Multani mitti). The mass is moulded into the required shape to form shallow baskets and is then left to dry. The work is general throughout the district.

Bhajji.

32. In Bhajji, one of the small Simla Hill States, paper is made from the inner bark of certain trees. The manufacture is carried on in the jail of the capital Sunni and also in a village on the slopes of the Spahi mountain.

Statistics.

33. An examination of the trade reports for the Province from 1901-02 to 1906-07 shows that the imports of paper into the Punjab have averaged 84,000 maunds valued at about 10 lakhs, whilst the exports have averaged 4,500 maunds valued at about Rs. 88,000.

In 1906-1907 the imports rose to the record figure of 1,10,000 maunds valued at Rs. 12,36,000, and at the same time the exports reached their maximum of 67,000 maunds valued at Rs. 1,30,000. All that can be deduced from these figures is that the local supply is absolutely inadequate to meet the demand, and that the deficiency is rapidly increasing. Considerably more than half the imported paper comes from Bengal and the United Provinces where paper mills are at work. The rest comes almost entirely from Europe through the seaport towns.

I have not given any tables either of the internal or external provincial trade, because they would only give an incorrect impression of the extent of the indigenous trade, for the figures apply principally to paper made in the various jails and in mills, and have little reference to paper turned out by purely native methods.

CHAPTER III.—MATERIALS USED IN PAPER MAKING WITH SOME DESCRIPTION OF THE QUALITIES OF PAPER PRODUCED.

Nature of paper making.

34. The work of the paper maker and that of the textile manufacturer are complementary one to the other. Whilst the operations of the latter are restricted by the length and strength of the ultimate fibres which have to be worked up into threads, there are no such limitations in the processes of paper making which, on the other hand, require that the raw material shall first of all be reduced to a state of minute sub-division of the constituent fibres, and for this reason can employ not only fibrous raw materials which are initially valueless to thespinner but also all kinds of discarded textile materials.

35. The materials for paper making can thus be divided into two large classes, namely: (1) raw materials, and (2) textiles of all kinds.

Primary classification of materials.

36. The raw materials again fall into three well defined classes arranged according to the manner in which their fibres and cells are aggregated together. Speaking generally fibres and cells join together in the form of compound tissues, the only important exception to this general rule being the cotton plant in which the fibres are so isolated as to be at once available without employing any process of separation, and it is the typical representative of the first class known as "seed hairs." The second group contains those raw materials in which the fibres show greater cohesion amongst themselves than adhesion to the contiguous cells with which they go, whilst in the third group the form of structure is exactly the converse.

Sub-divisions in the raw material class.

The following table gives some members of each group which are actually found in the Punjab and which are now or have been in the past employed as materials for paper making:—

Group.	A.	B.	C.
Descriptive name	Seed hairs	Dicotyledonous Bast fibres	Monocotyledonous Fibres.
Members	Cotton ...	Flax ... Hemp ... Daphne ... Desmodium.	Bhoosa. Maize fibre. Munj.

37. This list by no means exhausts the available raw materials in the province which, from the nature and variety of its indigenous plants, is capable of supplying an almost infinite quantity of fibre both for textile manufactures and for paper making.

Richness of the Punjab in fibres.

38. Natives have themselves done very little in the way of exploiting these resources, but experiments have been made with various fibres in the different jails. These on the whole have not been very successful. The implements most suitable for jail labour are not such as will work up the fibre of each and every raw material into a proper pulp, and consequently all others have been practically abandoned in favour of hemp fibre, whilst outside the jails the only other raw materials used to any extent are the inner barks of certain species of the Daphne and Desmodium plants.

Exploitation of the resources.

In the Punjab Exhibition of 1864 a number of specimens of paper were exhibited illustrating qualities obtained by using various raw materials. A full description of them is given in Mr. Baden Powell's Punjab Manufactures, Volume II, Chapter 8, and it is from that source that I have derived the following information in so far as it relates to past experiments.

39. Crotalaria juncea or hemp (ver. sunn) provides the fibre most used for paper making in the Punjab. It has been exported to Spain and Portugal for the same purpose, but has not as yet been extensively adopted in Europe. In the Punjab hemp fibre is not generally converted into paper direct, but is used in the form of ropes and tát which have become useless as such. It is generally mixed with waste paper, but at Jalalpur paper is made from the fibre alone obtained from discarded fishing nets.

Hemp fibre.

40. The bast fibre from the bark of the madar plant (calotropis procera) is one of the best of Indian fibres, its only disadvantages being the shortness of the fibre and the difficulties of separation. At one time paper was made in the Sirsa jail from its fibres, which were picked by hand, after drying in the

Madar fibre.

sun. Strong fine ropes are also made from it, and when discarded find their way to the paper vats. The silky floss of the pods contains too short and too light a fibre for spinning purposes but makes an excellent paper material. The plant is better known as the common ak and is found throughout the plains and up to 3,500 feet trans-Indus.

Flax fibre.

41. In the Gujrat jail excellent paper of a fine even colour and good quality was made from the refuse or tow of flax (linum usitatissinium, ver. *alsi*), which is a fairly common field crop throughout the Punjab.

Paper from chichra root.

42. In the same jail paper was made from the fibres of the chichra root or butea frondosa. Old tát and paper was mixed with the fibre in the proportion of 1 to 3 and ordinary processes were employed. The paper was not strong and broke when folded and so found no market. The plant is common as far as the Jhelum and grows to a height of 40 or 50 feet.

Daphne and Desmodium bark as paper materials.

43. There are several species of Daphne and Desmodium found in the lower Himalayas whose inner bark yield a strong and supple paper.

Experiments have been made with their fibres in different jails, and at the present time they are used as paper materials in the Bhajji State, both by the prison authorities and by a few local manufacturers.

The species most used are Daphne Papyracea and Desmodium Tiliæfolium, the local names for the former which is found at a height of 4,000 to 8,000 feet in the basins of all the Punjab rivers are as follows:—

Simla—*set barwa.*	Hazara—*puti lal.*
Sutlej Valley—*jiku.*	Kulu—*nigi.*

The process of manufacture will be described in a later chapter, but it may be mentioned here that the Nepalese are famous for the excellent paper they produce from the bark of the Daphne which is said to resist the ravages of insects, especially of the ubiquitous lapisma or fish insect, and is supposed to last in perfect condition for as long as 400 years.

Samples of Daphne paper have been sent to Europe, where a thin strong paper suitable for foreign post has been produced from it. The size of the paper varies up to great sheets, 30 feet long by 12 feet broad, which have been used as a material for the ceiling of rooms. The Desmodium Tiliæfolium which yields a similar fibre occupies a wider range and grows at a lower height than the Daphne; in Murree it is called *kalanchi*, in Dalhousie *konti*, and in the Rotang Pass *skak sing* or paper tree. The special advantage of these fibres is, that the resulting paper can be made very thin without sacrificing either strength or durability, but the comparative smallness of their range prevents them from being adopted generally as paper making materials.

Experiments with bhoosa.

44. In the Rawalpindi jail, paper has been made from chopped bhoosa Used alone it does not yield a good paper, but the quality is greatly improved if tát is added. The local jails in fact have not the necessary appliances to obtain paper of good quality from the various straws, and until there is the powerful machinery now used in Europe to apply drastic treatment to them, no good results can be anticipated.

Paper from date-tree leaves.

45. Paper made from date-tree leaves is occasionally found. It is tough and greenish in colour but is far from satisfactory.

Munj grass.

46. Munj or sara grass (saccharum sara) is particularly plentiful in the Punjab, and its fibres have been used in the Jhang jail. The results were not altogether satisfactory; the paper was inferior to that made from tát and had a yellow tinge. The fault probably lay with the defective appliances as the flower heads and sheaths of the plant are described by Sir Geo. Watt as some of the best paper grass materials in India, and they are in fact used as such by the Lucknow mills.

47. Turning from the raw materials to the various kinds of textile fabrics employed, the first point that attracts attention is the non-utilization of rags. The reason is not far to seek. Discarded rags are almost non-existent in a country where no tatter is too disreputable to find some wearer or other. Rag pickers are a race unknown, and it is safe to predict that any pioneer in such a calling would quickly rise in life to a vendor of very miscellaneous garments.

Textile goods used.

The Indian paper maker has thus to look elsewhere for his supplementary supply, and he finds it in tát and waste paper. The former comprises ropes, mats, gunny-bags, etc., woven from the fibres of sunn or hemp, which, when fit for nothing else, find their way to the jails and local factories.

48. As regards the old paper used I have information only regarding the jail supplies, where waste supplied from the North-Western Railway offices has displaced to a great extent, the District Court raddi formerly in use.

Old paper used.

Two varieties are supplied, namely, Serampuri and Henai, the former of which produces superior paper. The Lahore Female Jail acts as a distributing agent for those jails in the province which do not indent directly; the paper obtained is found to be cheaper than court paper and provided good labour and supervision are available it produces equally satisfactory results.

Five kinds of paper are turned out by the Ludhiana jail, the quality varying with the description of raddi and the proportion of tát used. The following table shows at a glance the proportions by weight that enter into the composition of the different classes :—

Class of paper.	I A.	II A.	I B.	II B.	III B.
Pure tát fibre used	1	1	1	1	1
Serampuri waste	3	2	...	...	...
Henai waste	...	...	2	2	...
Cuttings of I A	...	1	...	...	...
Do. of I B	...	...	...	1	7

49. Apart from the fibrous materials employed there are several chemicals which are used in the different processes of disintegration of the tát and raddi.

Sajji.

The most important of these and the only one that calls for remark is *sajji*, an impure sodium carbonate. It is produced from two different plants which grow in the bar tracts of the Bari and Rechna Doabs called "*kangan khar*" and "*gora lana.*" The former yields the best alkali which in a pure state is called "*lota sajji*" the product mixed with ashes being known as "*kangan khar sajji,*" and it is this residue which is used in paper making.

The process of manufacture is as follows :—

In October the plants are cut down and dried, and a pit is dug in the ground of hemispherical shape, about six feet in circumference and three feet deep. At the bottom are buried one or more inverted earthen vessels or tinds with small holes pierced in their upper portions. A fire is kindled in the pit and is fed with the dry plants until all are consumed and have yielded a liquid substance, part of which runs down into the tinds below. The residue is then well stirred up with a stick and covered over with earth to hasten the cooling, which is complete after a few days, leaving a mass of unpurified crude potash or *kangan khar sajji.* The solid inside of the earthen vessels is free from ash and is called "*lota sajji,*" because it is found in the *tind* or *lota.*

CHAPTER IV.—PROCESSES OF PAPER MAKING.

50. In describing the various methods of paper making it will be convenient to first discuss fully the jail processes and then to notice the details in which these differ from purely indigenous modes of manufacture.

General classification of the processes.

The numerous processes split up naturally into two distinct divisions, namely the destructive and the constructive, that is to say, the first stages of paper making are devoted to the reduction of the constituent fibres to a condition of minute sub-division, whilst the second stages are concerned with the production of a continous fabric or web by the aggregation of these structural units. The means of destruction vary accordingly to the materials to be broken up and as waste paper and tát ropes are both used in the manufacture of jail paper, it is necessary to describe separately the methods of disintegration employed for each, before we can pass on to the common processes of construction.

51. The various kinds of paper received into the jail have first of all to be carefully sorted and freed from such foreign matter as postage stamps and thread of all kinds, whilst the white waste paper must be separated from the brown as the latter makes only an inferior kind of paper. At the close of the day the sorted paper is examined by a jail official and if passed, it is sent to the boilers to undergo maceration.

Description of waste paper.

1. Sorting.

In this stage the paper is put into large boilers and boiled in pure water for two days. Each evening the water is changed, and on the third day a prisoner is employed in treading the paper and in tearing up the larger pieces, the object of the process being to separate, as far as possible, all extraneous matter, such as sand and ink.

2. Maceration.

The waste paper is then ready for pounding which is done in a factory containing a number of tread mills. The tread mill or jandar is a lever of the most elementary kind, consisting of a heavy beam of wood working on a pivot.

3. Pounding.

The longer arm is fitted at right angles with a heavy cylindrical block of wood shod with iron and works into a trough about 2½ feet deep and 3 feet square. Each jandar is worked by a gang of 3 prisoners two of whom stand on the shorter arm to depress it, whilst the third sits in the trough and feeds the pounder with the soaked paper. As the hammer is allowed to fall regularly, it is necessary for the man at the heavy end to know his work thoroughly or the labour of the other two is wasted. The daily task for each gang varies in different jails, in Ludhiana the task is one maund, in Rawalpindi 20 seers, but the pounding is not considered satisfactory until the mass has been reduced to small pellets. These are taken from the trough and rubbed through the palm of the hands until the pellets are reduced to finer particles which are in their turn sifted, and the smaller portions passed on to the kundas for soaking.

The kundas are circular troughs sunk into the ground and into each 20 seers of the pounded mass are put and mixed with lime and sajji water. The material is left in soak for one night and is then removed to a platform, specially made for the purpose with pacca bricks, where it is heaped up in conical dheries with a base circumference of about 4 feet and allowed to remain in the sun for a period which varies in different seasons and in different jails.

4. Soaking.

The object of this process is to cause thorough bleaching, and to hasten the process, a hole is made in the middle of the cone, and lime and sajji added to bring the composition of the mass to 20 seers paper, 2 seers 4 chitak lime, and 2 seers 8 chitak sajji. Water is sprinkled over the cone several times a day in order to keep the outer layer soft and to assist the action of the chemicals on the printers' ink.

5. Bleaching.

Dr. Fatteh Chand, late Superintendent of the Ludhiana jail and a great authority on papar making, says that the dheri should not be exposed for more than eight days in summer and four days in winter, as longer exposure results in the pulp deteriorating, becoming mouldy and yielding a weak and inferior paper. In some jails, however, the heaps are exposed for as long as three months before being broken up for the next stage of pulping.

6. Pulping.

This is done under the tread mills for half a day. In the evening the mass undergoes a preliminary washing under a stream of water, after which it is taken to the kundas or treading vats, again mixed with lime and sajji and allowed to stand for the night. In the morning the prisoners tread the pulp until midday, when it is ready for the final washing which is done by two trained prisoners of powerful physique.

7. Washing.

A strong chadar of coarse texture is tied round the waist of each, so as to form a bag in the middle into which about twenty seers of wet pulp are put, and water is allowed to flow in continuously whilst the men beat the chadar on to a platform. After about ten mintues the water runs out clear, and this is taken as a test that the washing has been fairly complete, but a more exacting test is to put a small quantity of the pulp into a gharra filled with water. If the particles sink to the bottom and remain there, the washing has been satisfactory; otherwise not. Two trained prisoners are supposed to keep seven vats going for the whole day, each vat turning out 10 quires of paper.

The final washing is the last process of the destructive stage, and after it, the paper pulp is ready to be mixed with the tát fibre which has been derived from hemp rope by somewhat different methods of disintegration which deserve a separate description.

Disintegration of tát ropes.

52. The rope is, on arrival, stored outside the jail walls and there cut into pieces of about an inch in length. These are spread out in the sun for two days and then beaten with a stick to open them out and to free them from all removable dirt.

1. Cutting.

2. First washing.

The fibre thus obtained is placed under a stream of water for its first washing which is continued until the fibre is thoroughly cleaned.

3. Soaking.

It is then placed in a deep tank for four days. After one day's soaking a prisoner stamps the cuttings with his feet and opens them out with his hands for several hours during each of the remaining three days.

4. Crushing.

The mass is then removed to the jandars to undergo the process of crushing. It is beaten twice under the hammer in its pure state, and is then mixed with a preparation of sajji and lime in the proportion of 20 seers of fibre to 8 seers of the powder, passed for the third time under the jandar and then removed to a platform, where it is heaped up in dheries for the purpose of softening and bleaching.

5. Softening and bleaching.

These heaps remain in the sun for periods which vary between four months in winter, two months in summer, and six weeks in the rains. The exposure is shortest in the rains, because the moisture assists the action of the lime and sajji, and for this reason the heap is moistened in dry weather by water poured in a hole which extends from the apex to the middle of the cone. As soon as the heap is ready it is broken up and consigned to the jandars for pounding.

6. Pounding.

The fibre passes several times under the hammer until it is reduced to a soft flimsy material which is then washed in a chadar by two prisoners until the water passes through clean and transparent when it is spread out on a

platform for drying. As soon as it is dry, it is returned to the jandars for final disintegration.

7. Disintegration.

In this stage the fibre passes repeatedly under the hammers until it is transformed into wool like filaments, when it is taken to the treading vats or kundas and beaten for about two hours until it is ready for the final washing.

8. Final washing.

Water should be used freely in this stage, the chadar being beaten on the ground briskly and regularly, as a thorough final washing will have a great effect in bringing the fibre to a good white colour.

Constructive process.

53. The waste paper having been reduced to pulp and the tát ropes to fibre, the two are mixed in certain proportions and enter together on the various stages of their constructive progress.

1. Proportions of pulp and fibre used.

The proportions of the two materials used vary according to the quality of the paper required; the greater the quantity of the tát fibre the stronger and less friable will be the finished article. We will suppose that Class I, A paper, is required. For this the paper pulp having been prepared from Serampuri raddi is mixed with tát fibre in the proportion of 3 to 1. The proportion is by weight and the ingredients are served out, in the shape of balls sized to weigh 10 seers, directly from the washing platform.

2. Process in the vats.

The admixture takes place in the vats, and as it is there that paper passes through a critical stage, some description of them is necessary.

Their size varies in different jails, but the most suitable one for all qualities of paper is a vat of about 33″ in depth and measuring 4′ 8″ × 4′ 4″ at the top, and 3′ × 2′ 8″ at the bottom. The inside should not be plastered with lime, mortar or any substance upon which the lime or sajji solution will have any action, as it is essential to keep the vats as free from extraneous matter as possible. The vat having been filled with water about 10 seers of the combined fibre and pulp are put into it. The mixture is thoroughly reduced to a state of suspension in the water by the whole being violently stirred up by means of a stick. The churning should be thorough, as on it depend the intimate admixture of pulp and fibre, their thorough diffusion in the water, and the consequent uniform texture of the sheet. If coloured paper is required the necessary colouring matter is added at this stage, the common native dyes being safflower for pink, turmeric for yellow and indigo for blue. The implement used in taking out the sheets of paper from the vat is a fine mat or strainer (Ver. *nir*) made of the fine flowering stalks of munj grass. This is stretched on a wooden rectangular frame work (Ver. *khansi*) in order to give it the necessary stability and then a *rumál* is laid on the top of both.

One man of the gang of three employed at each vat dips the frame into the water, holding it first horizontally and then bringing it by a wary motion to the surface. A fine layer of paper pulp is thus deposited on the *rumál*, but for the resulting paper to be satisfactory the layer must be even and homogeneous and as only an experienced workman can manage this, the dipper is invariably a picked man. The *rumál* having been dipped is placed on one side and the process continues, different *rumáls* being used for each sheet, whilst the *nir* and the *khansi* remain the same. It is the duty of the second man of the gang to wash each *rumál* before it is used, whilst the third man cleans the vats of skum, keeps them stirred and puts the *rumáls* with their pulp deposits in a heap (Ver. *chir*).

A different *rumál* is used for each sheet in order to facilitate the separation of adjacent layers of paper, and where a large quantity of paper pulp is used this is essential, as otherwise the sheets are very apt to break. In some jails, however, the same *rumál* does duty for the sheets of a full quire. The *rumál* then used has to be well made, full-sized and with the top margin finely hemmed. It is spread on the *nir* as usual, and when a sheet has been made and has set well, the hemmed margin is turned over a little further than is done in the ordinary

process described above. This margin is carefully laid out and replaced on top of the *nir*, after which the sheet is ready to be removed to the "chir" where the *rumál* is gently lifted off and used again in the same way for subsequent sheets, until a quire has been turned out when it is left on the last sheet and a fresh one is used for the next quire.

The secret of this method lies in the proper turning over of the upper border of every sheet, whilst it is still on the *nir* and its advantage lies in the fact that it facilitates separation of the sheets before they are pasted on a wall for drying.

3. Drying.

The wall where the pasting takes place is specially prepared for the purpose and should be kept clean and smooth by daily washing with a soft brush of the same kind as is used for the pasting on the wall.

When a sheet gets dry it is taken off and not allowed to fall as otherwise it gets creased and gathers particles of sand, which appear in the finished article as pin holes, streaks, or stains.

4. Rough polishing.

When dry the irregularities are rubbed off the surfaces of the sheets by means of a rough pumice stone. This work is not arduous and can be done by weakly and aged prisoners.

5. Sizing.

The next stage is the sizing in which the starch used is made from wheat, 5½ seers being sufficient for 20 quires of paper. The liquid starch is poured into a trough and prisoners apply the sizing on both sides of the paper by means of a rough glove.

6. Drying.

The paper has now to be dried again and this is better done in the factory than in the open air. A satisfactory arrangement consists of vertical and horizontal poles of wood in the form of a skeleton box, the upright poles being placed in the ground. Through holes in the horizontal poles runs a common string in parallel lines which can be easily tightened. A special coating is given to the string so as to impart smoothness and prevent flaws in the texture of the sheets when hung on the strings. Paper thus dried in a shed with a free circulation of air all round is then ready for polishing without any preliminary re-damping as is the case with sun-dried sized paper.

7. Polishing.

The implements used for polishing are the board (*patra*) and the stone (*ghota*).

The first named is a carved piece of wood fixed firmly on the ground with its concaved surface uppermost. It should be perfectly smooth and fixed at a certain angle on a *kachha* platform. The stone consists of a smooth flint set in an elliptical mass made either from clay or waste paper pulp, and of such a shape as to be convenient for holding in both hands. Squatting behind a board, on which first a small quantity of lime and then a sheet of paper are placed, the prisoner rubs the smooth surface of the flint along the length of the sheet, from time to time putting oil on the stone to prevent scratching, as during this stage it is most essential that every thing should be kept perfectly clean, or otherwise the surface of the paper will be spoilt.

Of all the processes polishing affords the hardest description of labour and at the most an able bodied man can polish six sheets per day to commence with, and these even he scratches. Gradually the task is increased until the maximum of 3½ quires 1st class paper and 4 quires 2nd class is reached.

8. Trimming.

The paper after polishing is made up into reams examined and passed on to an English hand machine cutter, when after trimming it is ready for the market.

Methods of purely indigenous manufactures.

54. Speaking generally the processes employed by native manufacturers differ only in detail from jail methods. The implements used are practically the same, the *jandar*, the treading vats or *kundas*, the paper vats, the *nir*, the *khansi* and the drying wall, all find a place in the native factories, and as they have been already described in detail it is unnecessary to repeat the description.

The process employed in Sialkot.

55. In Sialkot one maund of *tappar* or old hemp strings having been cut into small pieces by a *tokya* or cutter, are then soaked and passed ten times under the *jandar* when the resulting mass is known as *jhab*. A mixture consisting of 30 seers of *sajji* and 4 seers of lime is then added and the material passed 20 times again under the hammer.

It is then stacked and bleached in the sun for about a month after which it is known as *kundi* and is again beaten several times, washed and made into flat round cakes known as *chaklis*. These are dried, again soaked, beaten twice, and washed, after which the hemp fibre is ready to be mixed with the paper pulp, in the production of which little trouble is taken, the only process being the treading of the paper in a tub filled with water. After it is added to the hemp fibre however the mass is beaten under the *jandar* and again washed.

The process in the paper vats called *hondi* is the same as in the jails except that the paper maker (*kadya*) does not use a *rumál* at all but makes the paper on the bare *nir* or *munj* mat. The sheets are laid one on another without any intermediate cloth until ten quires or 240 sheets are made. The heap is then pressed by means of a board about two-thirds the breadth of the paper and twice its length, two men adding their weight to it, and placing it first at one side and then at the other until the greater part of the moisture is expressed. Drying and polishing are done in the usual way, but after the first polishing the Sialkot paper makers employ a process which has no counterpart in jail manufacture namely the smoking of the sheets in a four walled enclosure called a *gahi*.

The height of this place is about 3½ feet, and about six inches from the floor there is a grating of bamboo sticks below which glowing charcoal is placed. Each sheet is folded in three and laid on a cloth sheet stretched over the grating. Powdered sulphur is then thrown on the charcoal and the smoke working through the folds of the paper acts as a bleaching agent. This fumigating having been repeated two or three times during the day, the sheets are then sized and again smoked in the same manner.

The remaining processes are the same as in jails and call for no remark except for the various washings which are performed as follows:—

The pulp is thrown into a sheet, tied at the ends round the waists of two men, who stand in the middle of the stream and allow the water to run through the sheet at the same time shaking the pulp to and fro.

The excellence of Sialkot paper is attributed to the water-supply provided by the hill torrent Aik whilst the natural abundance of water in Kashmir is most probably the reason why the paper made there is of such a high quality.

Kashmir methods.

56. I have not been able to obtain much information about the Kashmir methods, but Ali Mir, a Srinagar paper maker, is said to use the following materials in order to turn out 40 quires of 1st Class paper:—

Old rags	...	...	...	40 seers.
Hemp	...	...	...	10 „
Sajji	...	...	...	5 „
Lime	...	...	...	1¼ „
Flour of white rice	...	...	...	32 „

The rags and hemp are pounded up in the ordinary way, but at every washing *sajji* is added to the mass at the rate of 12 *chitanks* to every 20 seers of the pulp.

Jalalpur Pirwala.

57. At Jalalpur in the Multan District the following materials are used :—

1. 1 maund of hemp obtained from old fishing nets.
2. 1 maund of *sajji*.
3. 10 seers of lime.

These materials are beaten, sifted, and then mixed in water where they remain in soak for 10 days in summer and about a month in winter and are then beaten under the *Jandar*. The mass is washed and the hemp fibre after separation from extraneous matter is put in soak in a *sajji* solution. After a certain time the mass is then pounded and again washed. The processes of soaking, pounding and washing are repeated three times, after which the fibre is ready for the vats and the subsequent processes present no distinctive feature.

Soda solution.

58. The Soda Solution referred to in the last paragraph is prepared as follows :—A maund of *sajji* is pounded and sifted so that about one-third is left fine enough for use. This is placed in an earthen dish filled with water and the solution resulting after 24 hours is taken to be of proper strength.

Paper made in Bhajji.

59. The processes employed in making paper at Sunni the capital of the Bhajji State are exactly similar to those through which the famous Nepalese paper passes.

The outer green bark of the plant *Daphne papyracea* known locally as *set barwa* being removed, the inner white portion is taken out and cut whilst fresh into small strips about a cubit long and an inch wide. Four seers of ashes of oak are then put into a basket of close wicker-work and water is passed slowly through them until an alkali of dark bark-like red colour is obtained. This alkali is then boiled in a large open mouthed vessel into which the strips of bark are thrown and left until they have absorbed all the juice of ashes, so many strips being put into the boiler as will require about half an hour's boiling before absorbing the liquid. After this time the bark is sufficiently soft to allow of easy pounding which is done in a shallow stone mortar with a mallet made usually of oak and is continued until the strips are reduced to a homogeneous pulp of the consistency of dough. This is then well washed with clean water until it loses all stringiness and breaks up into small particles when shaken about under water.

To make the paper a sieve and a paper frame are required, the former should have a mesh open enough to allow all the pulp save the lumpy portions to pass through, whilst the latter should be made with stout wooden sides so that it will float well in water and should have the bottom covered with very porous cloth or fine grass, which will retain the pulp whilst allowing water to permeate through. The sieve is placed over the frame and the two are floated in water. Pulp sufficient for one sheet is thrown into the sieve which is shaken about so that the finer pulp passes through into the paper frame, and when only the lumpy portions are left in the sieve the workman lays it aside and continues operations with the paper frame alone.

Taking the frame in his left hand as it floats on the water he shakes it with his right hand so that the pulp spreads in a uniform layer over the frame which is then removed from the water in such a way that the uniformity is not disturbed. The paper is then dried either in the sun or by placing the frame endwise near a large fire. When it is necessary to polish the sheets the process is done in the usual way, the convex side of a conch shell being used and after the paper has been sized with rice water it is ready for the market.

CHAPTER V.—CASTE AND CONDITION OF THE WORK PEOPLE.

Religions of the work people.

60. In an earlier chapter mention has been made of the caste prejudices which, whilst preventing the Hindus from adopting the far Eastern methods of manufacture from waste rags still permitted them to copy the Chinese and Japanese process by which paper is made from the inner bark of trees.

The same influences have remained at work up to the present day and their effect is now shown in the fact that in the plains where the first method is employed the work people are exclusively Muhammadans whilst in the hills where bark is still available as a paper-making material the artisans are Hindus.

Hindu castes.

61. In Bhajji State the manufacturers are Kolis whilst at Spiti Hindus of any caste make the paper.

Muhammadan castes.

62. As regards the caste of the Muhammadan paper makers, it was described in several district reports as Kaghazi.

This, however, is merely their professional name, in vogue from Kashmir to Delhi and the work people are in fact drawn from a variety of tribes.

In 1890 there were artisans at Sialkot of the following castes:—

Awans	175
Jats	115
Kashmiris	40
Lohars	30
Ulmas	6
Darzis	4

The number shown in Jats included in fact persons belonging to the following sub-divisions of Jat or Rajput castes—Bhatti, Bhuta, Khokhar, Janjua, Hir, and Mangar. At present out of 36 owners the castes are—

Awan	25
Jat	10
Ulma	1

the Jat sub-divisions being Harar and Goraya. A comparison seems to show that the men who have stuck longest to a dying industry are those who have no second regular profession to fall back upon.

In Jalalpur Pirwala the workers are Muhammadan Khojas and in Multan City, Kureshis, Charohas, and Khaggars each provide about one representative.

The few paper makers in Delhi are Shekhs who call themselves Kaghazis.

Wages of the work people.

63. Twenty years ago when the industry in Sialkot although declining, was still able to employ 400 men each process was carried out by an expert who had a distinctive name and wage according to the work he did.

The wages as given in Mr. Gee's monograph on fibrous manufactures were as follows:—

	Rs.	a.	p.
The Tokya (who cuts up the raw material)	0	3	0
Sathi (who works the *jandar*)	0	2	6
Kadya (who makes the paper at the vats)	0	3	0
Lavaya (who pastes the sheets on the wall)	0	2	6
Ghotaya kachha (who gives the paper the first rubbing)	0	3	0
The Ghotaya pukka (who gives the final polish) ...	0	4	0
The Vadhaya (who trims the sheets)	0	4	0
The Jhawan Marnewala (who cleans the sheet with the Jhawan, or pumice stone)	0	1	0
Mawa Laganewala (starcher)	0	1	0

The highest paid were then the polisher and the trimmer, as in both cases carelessness in the work would spoil the paper whilst polishing also entails the most arduous labour of all the processes.

Nowadays the work is done mainly by the owners who employ coolies at ordinary rates.

In Delhi and Multan also the owners do the greater part of the work and employ coolies only for the pounding, the latter earning about 4 annas per diem.

Condition of the work people.

64. In all the district reports there is a consensus of opinion that the industry is on its last legs and is bound to die out in a few years. In Sialkot there are 36 owners and with monotonous uniformity they are described as *Qarzdár* and their condition as "*khráb*".

In fairness to them, however, it must be added that the information was derived from paper makers themselves through a *safed posh*. It is not improbable that the former saw in the *safed posh* an inquirer for purposes of income tax, or at any rate like all artisans were ready to declare every profession to be in a more prosperous condition than their own. Even allowing, however, for a certain amount of pardonable exaggeration there is no doubt that Sialkot paper making yields very little profit and that the work people are turning to other trades and professions, and in fact a number have already become itinerant vendors of cloth goods.

So also in Jalalpur Pirwala the makers cannot afford to buy hemp ropes as once they did, but have to fall back upon old fishing nets from Karachi, whilst the writer of the Delhi report says that the workers there live in a few tumble down and very mournful looking huts and sheds and that the stagnant back-water of the industry found in the Jauris gardens only deserves notice because of its undoubted antiquity.

Conclusion.

65. Only one conclusion can be drawn from an enquiry into paper making as an indigenous industry in the Punjab and that is, that in a very short time it will be of interest only because of its past history.

CHAPTER VI.—PRICES OF PAPER AND PROFITS OBTAINED.

Figures relating to private profits unreliable.

66. Any information regarding profits, obtained by private enterprise, must in the nature of things be unreliable, for it is ultimately derived from the manufacturers themselves, who least of all have reason to give away the secrets of their trade.

The figures which are given below can, therefore, be regarded as rough approximations only to actual facts.

Figures in the Sialkot trade.

67. Mr. Gee, writing in 1890 about the Sialkot trade, gives the total cost including all wages of converting a maund of old *tat* into paper as Rs. 8-14-0, Rs. 7-15-0, Rs. 9-14-0 and Rs. 12-10-0 according to the quality, the increased expenditure being incurred in the processes of bleaching, washing and polishing.

A maund of pulp would then produce 2, 2½, 3 and 4 reams of paper of first, second, third, and fourth qualities, respectively, the corresponding prices per ream being Rs. 11, Rs. 7, Rs. 4-8-0, Rs. 2-8-0.

Assuming that the cost of production has remained unchanged, we can compare the profits then with the present profits, for one maund of pulp is now given as producing 2, 2½, 3 and 4 reams of paper of the various qualities, which are sold at Rs. 11-8-0, Rs. 10, Rs. 3-8-0 and Rs. 2-8-0 per ream.

Thus in 1890	1st Qual.	2nd Qual.	3rd Qual.	4th Qual.
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
Price per ream	11 0 0	7 0 0	4 8 0	2 8 0
Cost of production per maund	12 10 0	9 14 0	7 15 0	5 14 0
Cost of production per ream	5 5 0	4 0 0	2 10 0	1 7 0
Profit per ream	4 11 0	3 0 0	1 14 0	1 1 0
WHILST IN 1908				
Price per ream	11 8 0	10 0 0	3 8 0	2 8 0
Cost of production per maund ...	12 10 0	9 14 0	7 15 0	5 14 0
Cost of production per ream ...	8 7 0	4 15 0	3 3 0	1 11 0
Profit per ream	3 1 0	5 1 0	5 annas	13 annas.

Thus profits have on the whole fallen, but in making the comparison it must be noticed that the estimated fall is largely due to the assumption that Mr. Gee's figures regarding the outturn of finished paper per maund of pulp and the present decreased figures are both correct, whilst as a matter of fact it is difficult to understand why the outturn should have changed at all.

The prices of 1st and 2nd quality papers have risen, whilst there has been a fall in the 3rd and no change in the 4th quality. As it is the inferior qualities which have the greatest market, the manufacturer has on the whole lost by the general rise, whilst the cost of production has undoubtedly increased.

On the whole it seems probable that profits are not more than half they were twenty years ago.

Figures for Jalalpur Pirwala.

68. The following figures have been given as representing the profits at Jalalpur :—

		Rs.	a.	p.
1.	Cost of one maund old nets	4	0	0
2.	„ „ „ *sajji*	4	0	0
3.	„ 10 seers lime	0	4	0
4.	„ flour for starch	2	0	0
5.	„ pounding	8	0	0
6.	„ washing	1	0	0
7.	„ labour of vat man	2	0	0
8.	„ starching and drying	2	0	0
9.	„ polishing	1	0	0
	Total	24	4	0

The above materials turn out 60 quires which fetch on an average 6 annas per quire, so that the total price obtained=Rs. 22-8-0.

This shows a less, but the owners themselves invariably do the labour incurred in making, starching, drying, and polishing the paper, so that Rs. 5 expenditure are saved from items (7), (8), (9), and in addition waste pieces of paper are sold at Rs. 6 per maund.

Figures for Multan City.

69. The cost of the materials used by the few families who work in Multan city are given as follows :—

	Seers.	Cost. Rs.	a.	p.
Old hemp bags	40	0	10	0
Old paper	30	0	7	6
Sajji	10	1	0	0
Flour	6	0	10	0
Wood	15	0	4	0
Lime	5	0	2	6
Total		3	2	0

As the paper is of a very inferior description the above quantities produce as much as 240 quires of paper which sells at 6 pies per quire, or Rs. 7-8-0 for the lot.

In working up one maund of hemp bags the balance left over to pay for hired labour and to remunerate the owner is Rs. 4-6-0.

We can look at the question of profits in another way, for one man is supposed to turn out 20 quires a day the cost of production of which is 4 annas, and the sale price being 10 annas, it follows that a person working for himself can earn 6 annas per diem.

Prices and profits in the jail industry.

70. When we come to discuss the question of jail profits we are on surer ground, for the figures supplied are reliable and the deductions fairly accurate.

Results of past experiments.

71. Mr. Baden Powell in his Punjab Manufactures gives some information which is worthy of mention, as illustrating the economic results of experiments in various fibres.

In Gujrat Jail paper was made from the fibres of flax, *butea frondosa* and plantain with the following results :—

(1) *Flax, quantity used* 40 *seers*—

	Rs.	a.	p.
Cost of materials	5	2	0
Value of paper turned out	11	4	0
Profit	6	2	0

Detail of labour supplied.

Pounding for 22 days at 3 men per day ...	66	man power.
Washing for 6 days at 3 men	18	„ „
Sizing 1 day 4 men	4	„ „
Polishing	6	„ „
Making	4	„ „
Total ...	98	„ „

The labour supplied represented that of 98 prisoners working for one day, which for convenience may be called 98 man power.

Thus the profit yielded one anna per man per diem, which represented the wage at which a labourer might be employed without loss to the jail.

(2) *Butea frondosa.*

Quantity used 30 seers.

	Rs.	a.	p.
Cost of materials	3	4	0
Value of paper	5	0	0
Profit	1	12	0
Man power		98	
Profit per man per diem	0	0	3

(3) *Plantain fibres.*

Quantity used 20 seers.

Cost of materials	3	6	0
Value of paper	5	0	0
Profit	1	10	0
Man power		68	
Profit per man per diem	0	0	4

The above figures sufficiently explain the reason why the jails did not adopt the above fibres in place of *tat* and old paper.

Present day jail profits.

72. As regards present day profits statistics have been given in various ways so that it is not possible to tabulate them in one statement.

Generally speaking however—

"A" Class Paper is sold at Rs. 7-3-0 per ream.
"B" „ „ „ „ „ Rs. 4-13-0 „ „

and it takes 25 man power to turn out one ream of paper per diem.

In Rawalpindi Jail—

	"A" Quality. Rs. a. p.	"B" Quality. Rs. a. p.
Price	7 3 0	4 13 0
Cost of production	5 9 0	3 5 0
Profit	1 10 0	1 8 0

Profit per man per diem is about 1 anna.

In Delhi Jail—

	Rs.	a.	p.
Expenditure during 1907	1,895	12	0
Including *sajji* Rs. 6-15-0, lime Rs. 15, waste paper Rs. 713-10-6 and hemp Rs. 14-6-0			
Sale-proceeds	3,978	0	0
Profit for the year	2,582	4	0

In Multan Jail—

	Rs.	a.	p.
Cost of production of 100 seers of pulp ...	18	7	3
Sale price of 100 seers	39	8	6
Profit on 100 seers	21	1	3
100 seers of pulp make six reams, 1st quality and 5 reams, 2nd quality.			
Profit on one ream	$\frac{21 \times 2}{11}$ approx.		
Man power for one ream	25		
Wage per man per diem	0	2	6 approx.

Jail.	Ambala.	Ludhiana.	Jullundur.	Amritsar.	Gurdaspur.	Ferozepore.
Year.	1907-08.	1907.	1907-08.	1907-08.	1907-08.	1907.
Expenditure	Rs. 3,158	Rs. 616*	Rs. 855	Rs. 500	Rs. 616*	Rs. 2,115
Value of paper made ...	9,602	3,244	4,339	1,537	1,930	5,646
Gross profit	6,444	2,628	3,484	1,037	1,314	3,531
Daily number of prisoners employed	150	48	58	18	28	66
Profit per man per diem ...	a. p. 2 3	a. p 2 10	a. p. 3 1	a. p. 3 0	a. p. 2 5	a. p. 2 9

*(1).—The items of expenditure given for Ludhiana and Gurdaspur jails exclude paper cutting machines purchased during the year.

(2).—The number of working days has been taken as 310.

Deductions from jail figures.

73. I have given in detail the jail figures because they show both the nature of the competition with which private manufactures have had to struggle and the narrow margin of profit there is in paper-making.

In spite of every facility, close supervision of the labour, and an assured market at enhanced prices the jails can only show a profit which would be transformed into a heavy loss, if their labourers had to be paid at ordinary cooly rates.

The small profits also show that decrease in the market value of paper, combined with the increased cost of labour, would in time have killed the indigenous industry even if the manufacture of paper had never been adopted in Government jails.

CHAPTPR VII.—THE FUTURE OF THE PAPER MAKING INDUSTRY.

Future of the private indigenous industry.

74. As I have indicated in previous chapters there are no prospects for the indigenous industry which is certain in a few years to disappear, for all practical purposes from the Punjab. The survivors will be a few paper makers scattered in different centres who will struggle on to earn a small pittance by making inferior paper for banias' *bahis* or for packing purposes. The wonder is that an industry carried on according to the most primitive methods should have been able to live for so long, and the fact that it has done so is a sufficient criticism of the general lack of enterprise in introducing Western methods into India. The only regret is that the native industry has been to a great extent replaced by the jail manufactures, which proceed on equally primitive lines and produce little better paper.

Future of Jail industry.

75. More than twenty years ago, Dr. Gray, then Inspector-General of Prisons in the Punjab, predicted that at no distant time mill-made paper would come into general use and the manufacture both by native and jail processes would be a thing of the past.

The first part of his prophecy is approaching fulfilment, but there has been an increase instead of a diminution in the quantity of paper turned out by the jails and there are no signs at present of the jail methods being abandoned.

Nor is there any reason why Government should discontinue them; they give a means of employment to a large number of prisoners and supply the various offices with a description of paper which at least answers the purpose required. A complete discontinuance of the jail manufactures would come too late to revive the native industry whilst another form of employment would have to be found for the prisoners, which might cripple some other industry possessing more intrinsic merit than indigenous paper-making.

Future policy.

76. The policy of the future should rather be an encouragement of paper mills worked according to Western methods. There are a few at present in India, and a glance at the imports from them and from the sea-port towns into the Punjab shows that there is in this Province a tremendous market for good paper turned out by scientific methods.

Past experiments with various fibres.

77. The difficulty in the past has been the choice of a material which will satisfy all the conditions for a profitable and extensive outturn from an Indian paper mill.

Rice, straw, bamboo, *broussonetia papyrifera*, and *sunn* have all been suggested, but none of them are entirely satisfactory.

The supply of rice straw is practically unlimited, but the margin of profit in paper-making is too small to allow a large expenditure for railway freight on a material which serves no other purpose.

Bamboo again affords excellent paper if only the young shoots are employed, but practical experience has shown that a continuous supply of these cannot be obtained without injuring, if not killing, the plants, and moreover the largest clumps of bamboos are found in places where the difficulties of collection are greatest.

Some years ago experiments were made in extending the cultivation of the *broussonetia* or paper mulberry tree, and it was found that the Indian climate was most suitable for its growth both from seeds and cuttings, so much so, that Sir Geo. Watt writing in 1887 expressed his opinion as follows:—

"It seems to be an accepted idea in India that one day the *broussonetia* will be cultivated as a hedge plant throughout the greater part of the plains of India and thus become the Indian paper fibre of the future. If it will ever pay to cultivate any paper fibre this may confidently be viewed as certainly the most hopeful."

Little progress, however, seems to have been made, the truth being that it will not pay to cultivate any paper fibre which has no other use.

The raw materials most used at present by the paper mills are *munj* and *bhabar* grass, but the objections to these are that the grasses have to be collected over wide and distant areas, that collectors in their desire to obtain a maximum amount cut too near the ground and include undesirable parts of the grass, and that the railway freight is apt to be prohibitive.

The essentials of the ideal fibre for India.

78. The ideal Indian fibre must in fact satisfy several essential conditions. It must be cheap, abundant, accessible and capable of other use.

No material possessing all these qualifications has so far been used in the Indian paper mills, but there is at present some prospect of a more satisfactory material being employed in the future.

Possibilities of *megass*.

79. Quite recently chemical processes have been applied to *megass*, the refuse of the sugarcane with the result that an excellent paper has been produced from it.

The discoverer was Mr. Bert de Lamarre, proprietor of Ticarigua Factory, Trinidad, B. W. I., and in March last a Reuter's wire gave some account of his methods in the English paper. I wrote to Mr. de Lamarre asking him whether his process was capable of application to India and received the following reply :—

TICARIGUA FACTORY,
TRINIDAD, B. W. I.
June 5th, 1908.

DEAR SIR,

My own process, which is rather an adaption of modern chemistry than a discovery, is only adapted to sugar mills with a high extraction, as the economical production of pulp is in direct ratio to the absence of succrose in the cane to be dealt with.

Given that your factories have modern machinery and that you have a large and continuous supply of water, I see no reason why the process should not be adopted in India.

At present, however, I am extending my own pulp factory and have no time to develop abroad ; later on, I do not doubt that my process will be adopted in India and elsewhere. The cane after passing through my twelve roller "sugar mills" with double hot water maceration is freed of nearly all saccharine matter and gums, and at that stage consists of some 90% of Cellutose, of which 84% can be recovered ; this is then carried by over-head rail to the pulp factory, boiled in revolving boilers under pressure with different chemicals, and after washing appears very much as the ordinary "half stuff" of commerce.

The process thereafter is very similar to that of any other pulp or paper factory which calls for no special remark.

I should be happy to supply you with any further information you may desire.

Yours truly,

BERT DE LAMARRE.

Whether the practical results will justify expectations remains to be seen. If they do, it is anticipated that there will be a great boon in the sugar-cane industry in the West Indian Colonies, as it will then pay to grow sugar-cane for the sake of the *megass*, the resulting sugar being almost treated as a by product. *Megass* is now sold for fuel in the West Indies at seven shillings and six pence per ton, whilst the cost of manufacture into pulp by machinery fed with superflous steam from the sugar plant is said to be trifling and the value of the pulp is at least £5 per ton.

Its connection with the sugarcane industry.

80. The opportunity seems to be an excellent one for giving much needed encouragement to the sugar industry in this country.

During the last 25 years exports of sugar have fallen from 1,150,000 cwts. to 300,000 cwts. whilst imports have risen from 1½ to nearly 7 millions cwts., and in discussing the question the writer of the article on sugar in the *Imperial Gazetteer* of 1907 concludes as follows:—

"Taking all the existing conditions into consideration it may be anticipated that unless the Indian processes are replaced *by large works in which economy is possible* there must be an increasing consumption of imported sugar in the future."

The essentials given by Mr. de Lamarre for the success of his process are modern machinery with a high extraction and a large and continuous supply of water. These are the very conditions which are required for the development of the sugar trade, and if the two industries are worked together there seems to be no reason why there should not be an extension of both.

The utilization of *megass* by a paper maker who is also a sugar refiner will reduce the comparative railway freight on the paper material, and it is the cost of transport which at present allows so small a margin of profit.

Scope for experiments.

81. No private commercial man is likely to experiment for the present until results in the West Indies have justified expectations, but in the meantime the Agricultural Department could by experiments on the various kinds of sugarcane discover those which yield the most suitable *megass* and encourage their wider cultivation, for it is in the general extension of scientific methods that the hope for the future of Indian paper-making must lie, and if paper mills employing a large number of workmen can be established there need be no sentimental regret in the extinction of an industry, the methods of which contain nothing that is artistic and little that is interesting.

MONOGRAPH

ON

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IN THE

PUNJAB,

PREPARED BY

E. BURDON, Esquire, I.C.S.,

Assistant Commissioner.

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Wire is drawn by the *tar-kash* to various degrees of fineness according to the purpose for which it is required. The maximum degree of fineness to which wire is ordinarily drawn is 1,000 yards per *tola* of metal, but it can be drawn even to 1,200 yards per *tola* : this, however, is only done to order, for the purpose of manufacturing a particularly delicate thread or tissue.

The *dabkaya.*

9. The process of wire-drawing is now complete but a large proportion of the wire turned out by the *tar-kash* has to go through one other process before it is ready for the weavers and the *masala bananewalas,* the persons who prepare the finished articles of tinsel. It has to be flattened : and this is done by a workman known as the *dabkaya.*

Ordinarily wire is flattened by hand : but in recent years the Delhi workers have for certain kinds of tinsel taken to using machinery imported from England.

Flattening wire by hand.

10. The apparatus required for flattening wire by hand is of the simplest description. The workman has a small flat board, on the surface of which a number of upright spikes are fixed at regular intervals : five or six spools of wire—the spools being of the ordinary kind with a hole running through the centre—are placed one on each spike, the effect being that the spike keeps the spool in position while the spool can also revolve easily. The board is placed on the ground close to a low anvil with a convex surface. The strands of wire from the spools are then conducted between two small uprights which serve to keep the wires together over the surface of the anvil. The workman sits on the ground on the other side of the anvil to that on which the board of spools is, and holding the wires between the fingers and thumb of his left hand draws them over the surface of the anvil and as he does so strikes them with a hammer with a small head, the striking surface of which is slightly concave, the complement of the surface of the anvil.

Flattening wire by machinery.

11. The machine employed for flattening wire is shown in the illustration. It consists simply of two small highly polished steel rollers placed one above the other. The motive power is a large driving wheel turned by hand connected with the axle of one of the rollers by a leather band. The wire is on a large reel which revolves horizontally fixed close to the rollers on the same side as the driving wheel. The wire passes from the reel between the two rollers and is flattened in the process. To keep the wire in position, it is led over a small tongue of metal, with a groove running down the centre, the point of this tongue resting on the lower of the two rollers.

The process of flattening wire by hand is naturally very much slower and more laborious : but the wire flattened by machinery is not so strong as that flattened by hand and does not make such good thread. Only the wire which is to be made into gold and silver thread, that is, the finest wire, can be flattened by machinery. The machine in use is not sufficiently powerful to flatten the thicker wire.

Forms of tinsel made from wire.

12. The wire having been prepared by the *tar-kash* and the *dabkaya* in the manner already described is now handed over to various craftsmen, the *masala bananewalas,* the *kamdani* workers, the *batayas,* who prepare gold and silver thread, the lace-makers, etc. These are the persons who transfer gold and silver wire into the hundred and one forms of tinsel, which are known in India.

Masala bananewala is a generic name given to the workmen who prepare the spangles, etc., which are used in the gorgeous gold and silver embroideries which are one of the most noted products of India, the finest of them being prepared in Delhi city itself. An excellent description of these embroideries is to be found at pages 419-420 of Sir George Watts' " Indian Art at Delhi, 1903."

Salma.

13. Of the *masala* prepared, perhaps the commonest is that known as *salma.* The apparatus employed in making *salma* is shown in the illustration (No. 6). It consists of a low bench on one end of which a reel of wire is fixed to revolve on a horizontal axle. At the

other end of the bench there is a driving wheel about a foot in diameter. with driving string round the circumference : this driving string also passes round small wheel fixed a few inches above the bench, between the reel and the driving wheel. From the centre of the small wheel a needle about five inches long (*silai*) projects. The workman takes the end of the wire on the reel and twists it round the outer end of the needle. Two or three forward turns are given to the driving wheel : this causes the needle to revolve and the wire is twisted round the whole length of the needle up to the inner end. The workman then gives two or three backward turns to the driving wheel and the wire which has now been twisted into a spiral slips off the needle. The process is repeated over and over again until the reel is exhausted and all the wire has been made into a spiral.

Mr. Baden-Powell describes *salma* as being in appearance a thin close curl, like the tendrils of a creeping plant only very much finer and closer. *Salma* is made of round wire (*kora salma*) and also of flattened wire (*dabka hua salma*). There is a third form *tikora salma*, to make which a needle with four sides is used instead of a round needle, the result being that each ring of the spiral is four-sided instead of being circular. It is always made with flattened wire. To make *salma*, wire drawn to a fineness of 250 to 300 yards per *tola* is employed.

Gokhru.

14. Other forms of tinsel used in embroidery are *tar ka gokhru, sitara, ghizai* and *kiran*. *Tar ka gokhru* and *sitara* are made of a fairly thick wire known as *diwali* which is prepared in two thicknesses, one 6 yards to a *masha* and the other 12 yards to the *masha*. *Tar ka gokhru* is made in a very simple manner : two pieces of flattened *diwali* are plaited one over the other and nicked with finger nail where they cross : the finished article has the appearance of a length of waved or puckered wire, at once suggesting the prickly burr after which it is named.

Sitara.

15. To make the ordinary round sequins (*sitara*) round *diwali* wire is twisted into a spiral in the same way as *salma* is made. The needle used is rather thicker.

The *salma* so made is then cut lengthways with a wire-cutter, one blade of which is short and broad, the other being shorter still and very thin. The small blade is inserted inside the hollow of the spiral. When the spiral is cut, it separates into small rings (*kari*) which are then threaded on to a curved wire. The workman takes the wire in his left hand and drops the rings one by one on to an anvil. As each ring falls he flattens it with a hammer, thus transforming it into a spangle.

Ghizai.

16. *Ghizai* is particularly beautiful form of tinsel and the method of preparing it is extremely ingenious. A fairly thick wire is used, measuring 96 yards per *tola*. The wire is flattened and after having been flattened is again passed by the *tar-kash* through one of the eyelets in the *jantri*, the object being not to draw the wire finer but to produce a wire rounded on one side and hollow on the other. The transverse section of the wire from which *ghizai* is prepared is accordingly ◠.

The wire is then twisted into a spiral in the same way as *salma* is made, the rounded side of the wire forming the outer side of the spiral. A very close spiral is made : and the effect produced is that of a row of small gold or silver beads closely strung together.

Kiran.

17. *Kiran* is the ordinary tinsel fringe. It consists of short lengths of the flat wire known as *badla* a wire measuring 300 to 600 yards per *tola*. The ends of the short lengths of *badla* are worked into a narrow *dori* of gold or silver thread, which forms an edging to the fringe.

Kamdani.

18. One curious form of tinsel work has not yet been mentioned : I refer to the form of embroidery, known as *kamdani*, in which the thicker wire (*diwali*) is utilised.

To make *kamdani* a conventional pattern of flowers, stars, etc., is stamped on a piece of silk or muslin : flat wire (*diwali*) is threaded on a common darning needle and the pattern is embroidered with the wire in the same way as embroidering with silk is done. The work is very rough and will not stand looking into. The effect produced is that of spangled muslin or silk : *dopattas*, *kurtas* and caps, all of the gaudiest description, are turned out by the *kamdani* worker, and are chiefly worn by middle class Hindus and Mussalmans as holiday attire. *Kamdani*, as would naturally be expected, is generally made from *kandla tipatra* or *dopatra* : it is a cheap article of adornment and imitation wire is the appropriate material.

Badla and *battan*.

19. Three gauges of wire and the purposes for which they are used have already been described *diwali*, *moti* and *patli*, *ghizai ka tar*, and *salma ka tar* : I have also referred to *badla ka tar* in describing how *kiran* is made. There remains a fifth, *battan ka tar* which measures from seven hundred to one thousand or even twelve hundred yards per *tola* : and this wire and *badla ka tar* require special notice as they are more extensively used than any other.

Badla and *battan* are the names given to these wires when they are flattened. As a matter of fact, the rounded wire of these specific dimensions is not used for any purpose : the flattened form is always employed, *battan* for the manufacture of gold and silver thread and both *badla* and *battan* for the numerous forms of gold and silver lace which are given the generic name of *gota kinari*.

Kalabatun.

20. *Kalabatun* is made by twisting *battan* on orange coloured silk if gold thread is being made : for silver thread the *battan* is twisted on white silk. The illustration (No. 7) shows the method employed. The silk thread is suspended from a hook in the ceiling : at each end of the thread just at the height of the workman's knee there is a spindle. The *battan* is in a dish on the ground by the workman's side. One end of the *battan* is attached to the thread by the right-hand spindle and the workman sets the spindle revolving either by a twist of the thumb and finger or by rubbing it across the calf of his right leg. In this way the *battan* is twisted on to the thread and the thread which has now become *kalabatun* is coiled round the spindle. By delicate manipulation of the thread the workman can ensure that the thread is closely covered by the twisting *battan* or can leave infinitesimal gaps between the successive spirals. In the latter case a cheaper thread is made as less *battan* is required to cover it : but naturally it has not the same appearance as that in which the silk is completely covered and it is very liable to fray. The workers are called *kalabatun-saz* or *bataya* : most of them wear a leather guard on the right calf as without this the skin would be broken by the constant application of the spindle which has been referred to above.

Gota kinari.

21. The weaving of *battan* and *badla* into ribbon and lace is almost entirely done by women. There are several varieties of the gold ribbon which is generically known as *gota kinari*.

In making it the web is composed solely of *battan* or *badla* with a single strand of silk at each side to strengthen it : the woof is of the very finest silk, so fine as to be invisible, and the effect produced is that of a ribbon made up of strands of flattened wire. The narrowest ribbon is known as *dhanak* : this has 5 to 7 strands of wire in the web : then there is *gota* about a quarter of an inch to three quarters of an inch broad. *Thappa* is *gota* stamped with an iron die which leaves a pattern impressed on it. *Sinjaf* is a similar ribbon but still broader and the broadest of all is *anchal* or *palloo*.

Kacha and *pakka gokhru*.

22. There are further variations of these ribbons known as *kacha gokhru* and *pakka gokhru*. *Kacha gokhru* is a single length of narrow *gota* which has been manipulated by the finger-nails, as in the making of *tar ka gokhru*, so as to produce a waved or puckered ribbon.

To make *pakka gokhru* two lengths of narrow *gota* are mounted each on a strip of stout paper of the same breadth as the *gota*. The two ribbons are then

plaited one over the other in such a way that the paper on which they are mounted cannot be seen : the plaiting is done in a way somewhat similar to the way in which farmworkers in England plait straw, the result being to produce a wavy ribbon with ridges and depressions, in fact to reproduce the appearance of the *gokhru*.

Pemak.

23. In addition to these ribbons, various forms of *pemak* are also woven. *Pemak* is a ribbon in which the web is partly *kalabatun* and partly flattened wire. In *ektari pemak*, the web is of *kalabatun* entirely save for a single strand of flattened wire running down the centre. *Dotari pemak* is a slightly broader ribbon of *kalabatun* with two strands of flattened wire in the web, one running down each edge. Finally, there is *kanteki pemak* in which the web is of alternate strands of *kalabatun*, *badla* and *battan*.

Dori or *qaitoon* is a narrow braid made by plaiting several strands of *kalabatun* together.

History, etc., of the wire-drawing industry.

24. The following is a brief history of the wire-drawing industry and an account of the conditions under which the industry is carried on.

There can be no doubt that the industry is an extremely ancient one. Sir George Watts states that there are evidences that drawing of gold and silver into wire has been practised from time immemorial. He further remarks that "wire-drawing, at least in its present form, would appear to have been first practised by the Muhammadans. It does not, however, follow that the Hindus did not possess a cruder and more laborious process of their own, long anterior to the conquests of the Pathans and the Moghals. In fact, the references to gold textiles, in the most ancient writings of India, almost of necessity involve such knowledge. Moreover, there are many oddities, both in wire-drawing and gold-weaving that suggest their being survivals of former and cruder methods and styles than are at present practised."

Extent of the industry.

25. The extent to which the industry was carried on may be gathered from the fact that in 1903 it was estimated that in Delhi alone 300,000 miles of gold and silver wire were turned out annually : but an even clearer appreciation of the high place which wire-drawing holds, or at least up to a short time ago held, among the crafts of India, may be derived from a brief account of the various articles for the manufacture of which gold and silver wire are used.

Tinsel embroideries.

26. Reference has already been made to the gold and silver embroideries of Delhi. The embroideries produced by Manick Chand-Kishen Chand and other manufacturers in Delhi, whose names are not so well known, consist largely of articles which are in demand with European visitors to India : they comprise table-cloths, table-centres, d'oyleys, hand-bags, etc., in which the most exquisite patterns are embroidered with gold and silver wire on satin. Manick Chand generally has on view one or two extremely beautiful dress-pieces : I have seen one of white satin, embroidered with silver wire : another was of silver tissue, a cloth of silver woven of silver *kalabatun*, with a pattern embroidered in silver wire.

The most magnificent productions of the chief Delhi embroiderers are large *purddhs* of crimson velvet, decorated with gold and silver embroidery in high relief. I have seen two admirable *purdahs* of this kind, one embroidered in gold and silver with a representation of the Qutab Minar : on the other the Jama Masjid is depicted.

But from the point of view of the history of the industry, the most important forms of embroidery are those which appeal to purely native taste, for the production of which the wire-drawing industry must have been stimulated and elaborated. The velvet coats richly embroidered with gold and silver wire, which are worn by persons of position on occasions of ceremony: the gorgeous professional attire of the nautch-girl, consisting of silk or satin, profusely decorated with

salma, *sitara*, *gokhru*, etc., edged with a deep band of gold and silver *gota* cunningly blended together, and finished off with a heavy fringe of gold and silver tinsel (*kiran*) : the endless variety of embroidered caps, from those embroidered in high relief with genuine gold or silver wire and spangles to those in which a few strands of cheap *kalabatun* or a small edging of *gota* are the sole adornment : muslin fabrics interwoven with gold or silver *kalabatun* : embroidered shoes : and the *hars* or necklets, consisting of a loop of plaited *gota* from which are suspended one or more medallions edged with *kiran* and embroidered with waved wire and sequins, the necklets which are placed round the necks of distinguished guests at ceremonial assemblages ; all these and many others are the final products of the wire-drawing industry. It is clear that the reason why the industry has or had such a vogue is that, while it provided the material for the most costly fabrics which could only be used by the higher classes, it also produced a cheaper form of tinsel which was within the reach of nearly every person.

At the present day there is still a universal demand for these tinsel embroideries : every child except among the very poorest classes has an embroidered cap and embroidered shoes and every woman of any social position has her holiday clothes embroidered with wire and spangles or edged with *gota kinari*. Further the recent rise of touring theatrical companies, chiefly consisting of Parsis from the Bombay Presidency, has created a large demand for imitation tinsel which is used to embroider the actors' stage costumes.

Decline of the industry. The wire-drawers' guilds of Lahore and Delhi.

27. While it cannot be said that the demand for tinsel made from drawn wire has in any way decreased, there is no doubt that the indigenous wire-drawing industry is and has for some years been declining and indications are not wanting that it may in time disappear altogether.

It certainly does not rank now as one of the premier industries of the Punjab or even of Delhi, formerly the chief town where the industry was practised. The clearest evidence of the decline is to be found in the history of the guilds of *kandla-kashes* of Delhi and Lahore. Mr. Baden-Powell gives a brief but interesting account of the Lahore guild. To prevent the deterioration of the Lahore manufacture and consequent depression of the trade, all the *kandla-kashes* worked together in the old mint buildings the "*Tankshal*" of Lahore. Each *raini* prepared for wire-drawing was taken by the *kandla-kash* to the municipal office where it was tested. The fixed proportion of alloy allowed in a *raini* intended to be drawn into pure *kandla* was 32 rice grains or 4 *rattis* to the *tola*. Any *raini* found to contain more than this proportion was destroyed as spurious, but the *raini* which was passed as satisfactory was stamped with the mark L. 32. The system was an admirable one : the purity of the Lahore *kandla* was guaranteed, the solidarity of the guild was assured by it and the trade was protected against fraudulent interlopers who might damage the credit of the industry and undersell the true *kandla-kashes* by placing on the market as genuine *kandla* wire which contained more than the recognised quota of alloy.

But the maintenance of this system depended solely on the willingness of the craftsmen to adhere to an inherited custom : and it appears that lapse of time and the introduction of new commercial ideas so far weakened the authority of custom that the system gradually fell into disuse : by 1890 the municipal factory was closed and the practice of hall-marking the *kandla* discontinued, facts which may be taken to show that the guild had become disorganised, and that the industry had already been declining for some time. In Delhi events have taken very much the same course : but there is rather more material available for the history of the Delhi guild. The guild is an extremely ancient one. One of the earliest facts known about it is that it used to work in the *serai*, which occupied the site of the present Town Hall. This *serai*, perhaps the most famous of the old Delhi *serais*, was built by Jahanara Begum, daughter of Shah Jahan in 1650. Tradition ascribes to it the name of Chandni serai. Shortly after 1857 the members of the guild were removed from this quarter and were rehabitated in the street running south from the doors of the Fatehpuri mosque. The majority of the *kandla-kashes* still reside in this quarter ; it is known as the *muhalla kandla-kashan* and it is here that the municipal smelting house was established.

28. Under Moghal rule the guild of wire-drawers paid fees to governmen t, and when control was assumed by the British, the levy of fees was continued, though it does not appear that the impost was ever legally sanctiond: but so far from objecting, the wire-drawers for years heartily approved of the payment. It was generally considered that the supervision by the controlling power, which was a necessary consequence of the levy of fees, gave the industry a special distinction, as it were "letters patent" assured the purity of the *kandla* made and generally maintained the solidarity of the guild. In fact there is a tradition to the effect that once under Moghal rule and once in the earlier days of British rule the levy of fees was discontinued and was only renewed at the earnest request of the *kandla-kashes* themselves.

Taxation of the guilds.

29. Payment of the fees and supervision by the municipality was then continued up till 1889 without any question being raised as to their propriety. In Delhi there was no hall-marking as in Lahore: but as all the material was smelted at the municipal factory and afterwards weighed and passed by the municipal official who collected the fees, there was a sufficient guarantee that the recognised standards were adhered to. In 1889 Government instituted an inquiry into the nature of these fees: and when it was ascertained that the fees were levied as an octroi tax on silver and gold, it was suggested that the impost should be abolished as being irregular. Mr. Clarke, the Deputy Commissioner of Delhi, however, reported that the guild was unanimously in favour of continuance of the levy. He further reported that "he had expected, when it became generally known that payment of the fees could not be legally enforced, that the guild would refuse any longer to submit to supervision or to pay fees; but that he was surprised to find that, on the contrary, something like a panic pervaded the guild and the general impression was that the trade would be ruined and widespread distress would be the result" (*i.e.*, of the levy being stopped by Government). In explanation of this attitude of the guild Mr. Clarke wrote that after the bar was once made at the smelting-house, adulteration of the metal could not occur and the supervision exercised by the municipality was, therefore, a guarantee that the wire of Delhi is of the degree of purity which it purports to be, a fact which has secured to Delhi embroidery an undisputed pre-eminence throughout India.

Attitude of the guilds to taxation.

The fees were accordingly continued but they ceased to be classed as octroi and were shown as payments for services rendered. By 1903, however, schisms had arisen in the guild and certain renegade members conceived the idea of refusing to pay the fees, knowing that the payment was one which could not legally be enforced. On an attempt being made to recover these fees, the legal position of the Municipality became manifest, and the Municipal Committee realised that, while the maintenance of some system of supervision and taxation was in the best interests both of the Municipality and the guild of wire-drawers, it was necessary to put the impost on a proper legal footing so as to obviate a recurrence of the difficulties of 1903. It was accordingly proposed that the fees should in future be levied as a profession tax under the Municipal Act and in 1905 a set of draft bye-laws were prepared. But the task of framing suitable bye-laws was a very difficult one: new economic factors have arisen which complicate the proposal to levy the tax: the proposed bye-laws have been altered and reconsidered many times and have not yet been finally approved. Meanwhile the payment of fees to the Municipality has entirely ceased and the Municipal smelting-house stands empty. Both in Delhi and Lahore, then, the most important centres in the Punjab of the wire-drawing industry, the guilds of craftsmen have gradually become disorganised, and the weakening of the guild system has been accompanied by a decline in the industry itself.

30. It appears that in the beginning the disintegration of the guilds and the consequent decline of the industry were due solely to internal dissensions among the craftsmen themselves: the real danger, however, threatened when the guilds found they had to face the competition of foreign manufacturers, and the cause of the present unfortunate condition of the wire-drawing industry lies in the fact that imported wire and tinsel have, to a very large extent, taken the place of the native-made *kandla*. Gold and silver tinsel of every kind and imitation gold and silver tinsel are imported in large quantities,

Further causes of decline Foreign competition.

chiefly from Germany, and are sold so cheap that the locally made articles cannot compete with them. Further, the imitation tinsel imported has an excellent appearance and, in spite of the fact that it tarnishes readily, it is now largely purchased instead of the tinsel made from the pure metals; the result is that the production of genuine gold and silver wire in India has decreased, and as it is even more impossible for the *kandla-kash* to turn out imitation wire, etc., at as low a cost as the imported imitation wire is made, than it is for him to produce genuine tinsel which can compete in price with imported genuine tinsel, the entire wire-drawing industry has been affected in a disastrous manner. In Delhi itself the competition of imported tinsel has made itself felt in two ways. The production of drawn wire has decreased though a good deal is still made on account of the fact that a demand for the pure Delhi wire still exists: but of the wire that is made fully 95 per cent. is used in the weaving of *gota* and the manufacture of *kalabatun*. The manufacture of *salma*, *sitara*, *ghizai*, etc., is now practised on a very small scale indeed, the fact being that the native workman cannot hope to produce these variegated forms of tinsel as cheaply as they are produced in Europe. Throughout the Punjab the tendency appears to be the same. Amritsar still produces a fair quantity of wire annually, but nearly all is used for weaving *gota*: in Jullundur there is one factory and there are one or two in Gurdaspur, but there, too, the wire is manufactured for *gota* and *kalabatun* and for no other purpose. Multan was at one time an important centre of the industry, but at present there are only some 400 workmen in all there, and the only article produced is silver *kalabatun*.

Protective octroi duty on imported wire.

31. Efforts have been made to protect the indigenous industry against the competition of imported tinsel by subjecting the latter to the payment of octroi: but in Delhi itself, where it is of the supremest importance to foster the industry, inasmuch as over a *lakh* of people at one time depended on it for their livelihood, the imposition of octroi has poved ineffectual. To avoid the payment of octroi consignments of foreign wire and tinsel are broken up at Bombay or Karachi, made into small parcels and forwarded to Delhi by post. There being no authority for the collection of octroi on goods imported by post, the bulk of the foreign wire and tinsel escapes the payment of octroi altogether. This fact has been clearly recognised by the Municipal Committee of Delhi as likely to militate against the success of its proposal to re-habilitate the ancient guild of wire-drawers by compelling them to return to the Municipal smelting-house and to avail themselves of the benefits of municipal control. The matter has been represented to higher authority and the sanction of Government has been obtained to the collection of octroi on all foreign wire, etc., imported by post.

This proposal is designed to serve as a corollary to the attempt to compel the wire-drawers to form themselves again into a united guild working under the supervision of the Municipal Committee, and it is hoped that the two measures will combine to restore the industry to its former condition of prosperity.

The workers.

32. It only remains now to give a brief account of the position and status of the wire-drawers and of the effect produced on the industrial conditions by the competition of foreign wire, etc., which has been already referred to.

It has been estimated that up to a short time ago wire-drawing and the industries dependent on wire-drawing furnished employment to over a *lakh* of men, women and children in Delhi city and the surrounding villages. Of the workers, the men employed in the *kandla* factories are, practically without exception, Hindus; the *tar-kashes*, the *masala-banane-walas*, the *dabkayas*, the *kalabatun* spinners and the *gota kinari* weavers are Mussalmans. An interesting feature of the industries is that many of the processes are carried out by persons who might, from an industrial point of view, be normally regarded as non-productive members of society. The only workmen who must be possessed of physical strength are the *khichayas* and the *dabkayas*; old men and boys make most of the *kalabatun* and spangles and practically all the *gota kinari* and lace are woven by women.

33. *Kandla-kashi* is carried on in a factory owned by one man in which eight or nine *khichayas*, *bara-kashes*, etc., are employed. The owner of the factory either has his own material drawn into wire by his workmen or receives metal from a *bipari* and has it made into *kandla* in his workshop, charging a fixed rate for the work. The workmen are paid a fixed sum for each *gulli* drawn into *kandla*. All other tinsel workers work either in a small factory or each works at his own house. They work on the piece-work system: a certain quantity of material is given to them by the *bipari*: the workman converts it into the desired form of tinsel and is paid at the rate of so much per *tola* of material.

The system of manufacture.

34. The gradual ousting of native wire and tinsel by the imported article, accordingly affects a very large body of workers. But it appears that so far as the question of daily bread is concerned, the effects of competition have only been felt seriously by those craftsmen who constitute a small proportion of the total workers engaged in the industry. The workers in the *kandla* factories have been affected as the demand for native made wire has decreased: and the *masala bananewalas* have suffered still more, as while *salma*, *sitara* and *ghizai*, etc., are still made in the province, they are made in very small quantities: in fact, it is stated, that they are only made to comply with an urgent order in the event of a parcel of imported tinsel failing to arrive at the time it is required. Further such tinsel as the *masala bananewalas* are required to manufacture, is, as a rule, manufactured of imported imitation gold and silver wire.

Effects of competition on the workers.

On the other hand, there still appears to be sufficient work for the *tar-kash* and the *dabkayas*, and in an even greater degree for the *kalabatun* spinner and the *gota*-weaver. Such wire as is produced in the province passes through their hands, but the greater part of the tinsel products manufactured by them is made of imported wire. Briefly, the position is that the manufacture of drawn wire in the province has decreased, and as regards the manufacture of tinsel, the old processes still exist, but to a large extent the work is done with foreign material: the workmen, who have not actually been robbed of their employment, receive less for their labour than they used to, the rate of pay they can earn varying from Re. 1 a day, the amount earned by a *khichaya* in regular work, to one and a half annas a day: the latter sum is all that a *gota*-weaver can earn by a day's hard work.

PART II.—OTHER FORMS OF TINSEL.

35. The forms of tinsel produced by drawing metal into wire have been described: it now remains to describe the forms of tinsel which are created by beating metal into leaf or foil. Three metals are treated in this way—gold, silver and *ranga*.

Foil.

36. Gold and silver are made into foil in the same way, gold leaf being made from a *passa* of pure gold and silver leaf from an ingot of pure silver. To make silver leaf an ingot weighing approximately 196 tolas is taken and cut in half: the half ingot, a four-sided bar pointed at one end, is heated red hot and beaten out on an anvil into a long thin four-sided bar. Two men hammer and a third holds the bar on the anvil with a pair of pincers. Between the strokes he turns the bar round on the anvil so that it is evenly struck on all four sides.

Gold and silver foil.

37. The long silver bar is then drawn into wire by means of the *jandar* and *jantri* in the same manner as *kandla* is drawn: the process is, however, very much less laborious, as the bar is at most only one quarter as thick as the *gulli*. The wire, too, is only drawn to a fineness of four or five yards of wire per *tola*, *i.e.*, the wire is twice as thick as *kandla* wire.

The drawing process.

38. The wire is then flattened by the *dabkaya* in the manner already described in the part of the monograph dealing with wire-drawing. A narrow silver ribbon one-eighth of an inch broad is produced. This ribbon is then passed on to another workshop where it is flattened out still further. The ribbon is folded in lengths of about two feet, until there are 80 layers of ribbon, one on the top of the other. The bundle is tied with thread at each end and in the middle to ensure that each layer will remain exactly over the one beneath it. The bundle is then laid on an anvil and beaten out till the ribbon has become three-eighths of an inch broad. The bundle is then opened out and the ribbon is passed on to the silver-beater.

The flattening process.

39. The beater cuts the ribbon into pieces from half an inch to three-fourths of an inch long and lays these pieces between layers of *jhilli*, a parchment-like membrane which is made of the inner skin of sheep, goats or deer.

The beating process.

The sheets of *jhilli* are about one foot long by seven inches broad. Each piece of silver ribbon is placed accurately over the one immediately underneath. About 150 pieces of silver are placed in this fashion between intervening layers of *jhilli* and the book is then complete. It is then placed in a bag of soft leather.

The beater sits on the ground and places the bag before him on a block of hard smooth stone sunk into the ground. He starts beating with a hammer which has a long narrow striking surface. The beating goes on continuously until the 150 fragments of silver ribbon have become 150 leaves of foil, each as large as the sheets of *jhilli*. At certain stages of the beating process the book is opened : each leaf is cut into two or three pieces which are moved half an inch or so away from each other.

The book is again shut up and the beating renewed : the separate pieces of each leaf are beaten out until they touch each other and again unite into a single broad leaf.

Three days' continuous work is required to beat out a book of gold leaf. The 150 leaves when completed weigh from five to six mashas, each leaf being equal in weight to four rice grains. The manufacture of silver leaf is carried on very much more extensively than the manufacture of gold leaf : the latter is only prepared to order : it is a costly article and there is no constant demand for it. On the other hand, the extent to which silver leaf is manufactured may be gathered from the fact that 200 *tolas* of the narrow ribbon which is converted into silver leaf are sold daily in Delhi.

40. Both kinds of foil are used to gild wood and metal in India as in other countries. At the Sikh temple in Amritsar an excellent example may be seen of the effect produced by overlaying copper plates with gold foil. Gold and silver foil are also used for purposes peculiar to India, *i.e.*, they are used as component parts of Indian medicines, and they are also used to decorate sweetmeats. But possibly the commonest and most characteristic use to which these foils are put is tinsel printing on cloth and leather. The work is known as *wasma* : a conventional pattern is first stamped on the cloth with a wooden die, which has been dipped in a biscuit coloured mixture of *kharia mitti*, *saresh*, *gond* and water, of the consistency of thin paste. The cloth is then passed on to another workman who spreads it on a table. By his side he has a book of foil with the top leaf of foil exposed : foil is always sold in books, each leaf being separated from the other by a sheet of tissue paper. The workman then takes a flat pad, made of cotton wool covered with thin paper. The pad is damped and pressed on the foil which adheres to it, and the pad is then rapidly stamped on the cloth over the pattern. Fragments of the foil adhere to the spots and lines of the pattern, being caught and held by the sticky mixture already described.

Purposes for which foil is employed. Tinsel printing.

Purdahs, coverlets, etc., and many articles of female dress are prepared in this way, the effect being remarkably decorative. Gold and silver foil are stamped on patterns on leather shoes in a somewhat similar manner.

Foil made of *ranga*.

41. Foil made from *ranga* appears to be very little used at the present day, but it is still manufactured in a few places. *Ranga* or block solder is melted and poured into a shallow mould, bars of metal about 16 inches long, 1 inch broad and one-fourth to half an inch thick being produced. The bar is then hammered out into a flat ribbon. A number of these ribbons, sufficient to aggregate 2½ seers weight, are folded into lengths as is done in the case of the ribbon which is to be made into gold and silver foil. The bundle of ribbons is then hammered out on an anvil with a heavy hammer. When the ribbons have become fairly broad, they are separated and cut into small lengths. These small lengths are laid one above the other and the hammering process is continued until the complete *panni* are turned out. At intervals the ribbon and the leaves are shaped, the rough edges being cut off: half a seer of metal is lost in this way. The original 2½ seers of metal are converted into about 1,400 *panni* after eight days' continuous labour: the waste half seer is set apart and melted down again.

The use of *ranga* foil.

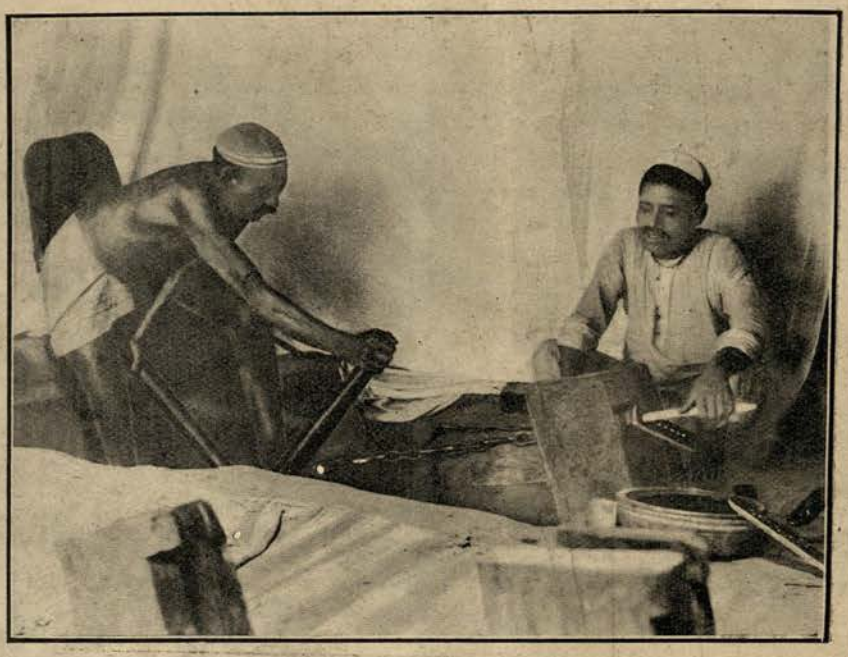
42. The *panni* were at one time used in the manufacture of mirrors, but the import of cheap mirrors from abroad has put an end to this. At the present day in Delhi, these *panni* are only used as a tinsel covering for the common *lac* bracelets, but even for this purpose their place is being taken by the cheap coloured metal *panni* which are imported from Germany. In Delhi there are only five or six shops where *ranga* is made into foil, and they are able to supply the needs both of Delhi itself and of most of the neighbouring towns. The process of manufacture is obviously both crude and laborious, and this particular branch of the tinsel industry can only be regarded as an interesting survival, the existence of which cannot be maintained for long.

APPENDIX

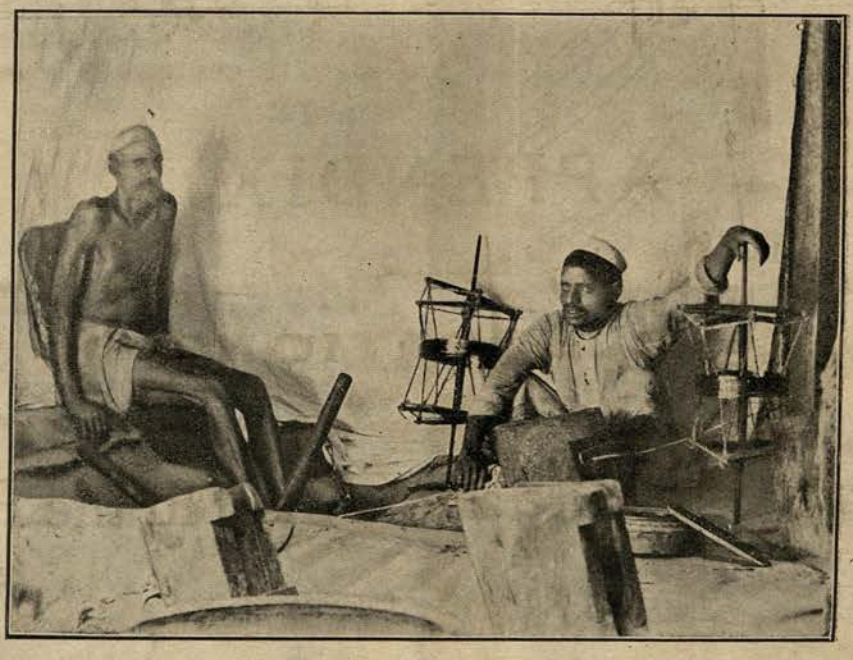
ILLUSTRATIONS.

Monograph on Wire and Tinsel in the Punjab.

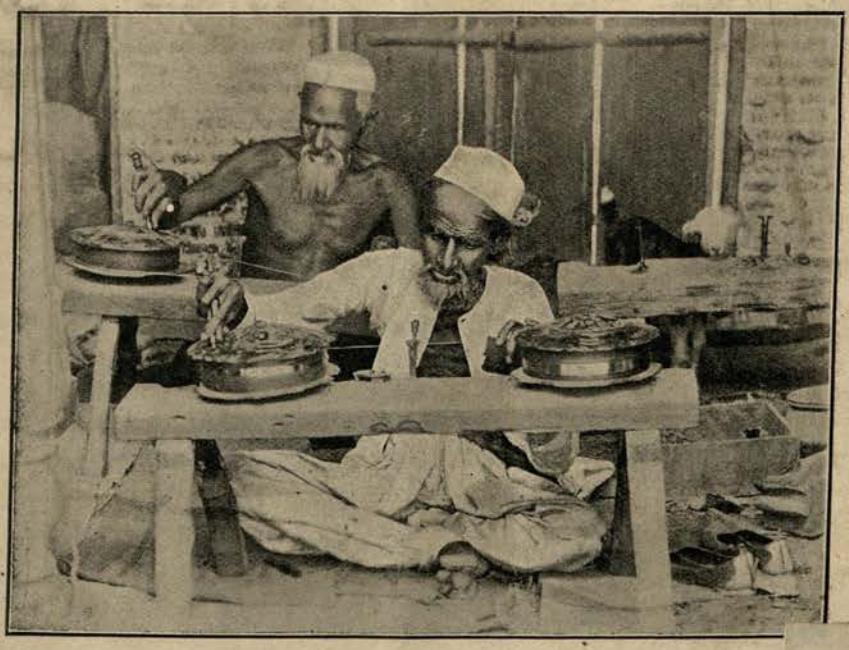
APPENDIX—ILLUSTRATIONS.



No. 1.—WIRE DRAWING. THE FIRST.
(*Vide* para. 6).

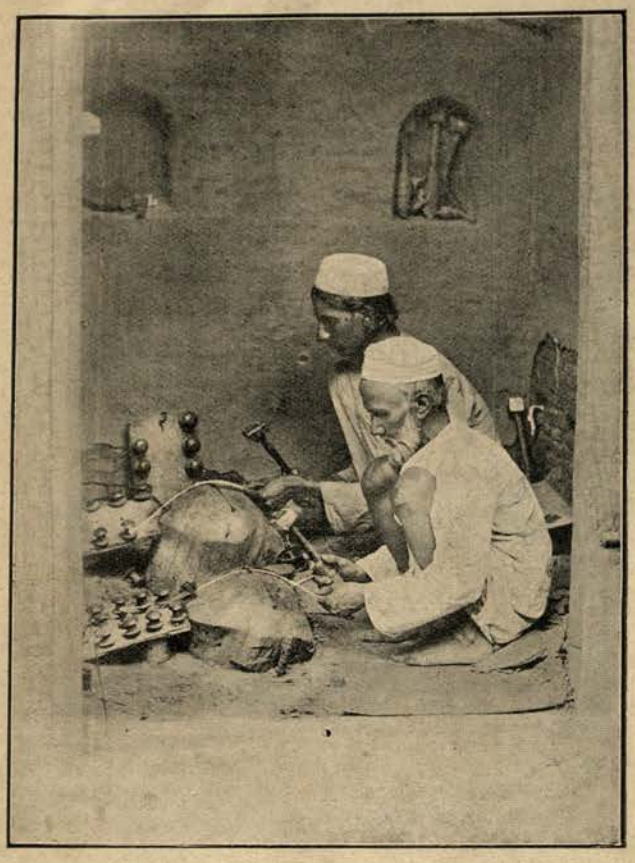


No. 2.—WIRE DRAWING. A LATER STAGE.
(*Vide* para. 6).



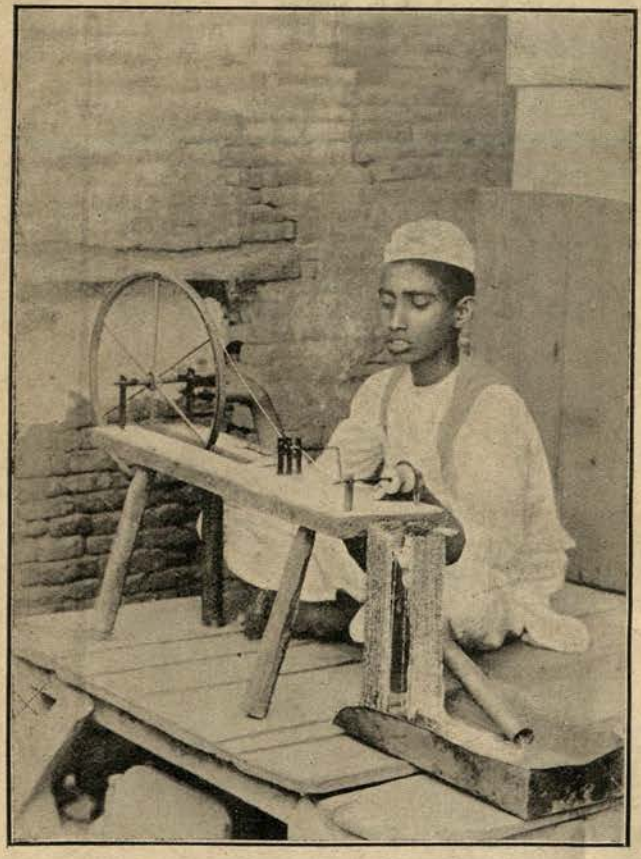
No. 3.—THE TARKASH.
(*Vide* para. 8).

APPENDIX—ILLUSTRATIONS.



No. 4.—FLATTENING WIRE BY HAND.
(*Vide* para. 10).

No. 5.—FLATTENING WIRE BY MACHINERY.
(*Vide* para. 11).



No. 6.—TWISTING WIRE INTO SALMA.
(*Vide* para. 13).

No. 7.—KALABATUN SPINNERS.
(*Vide* para. 20).

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